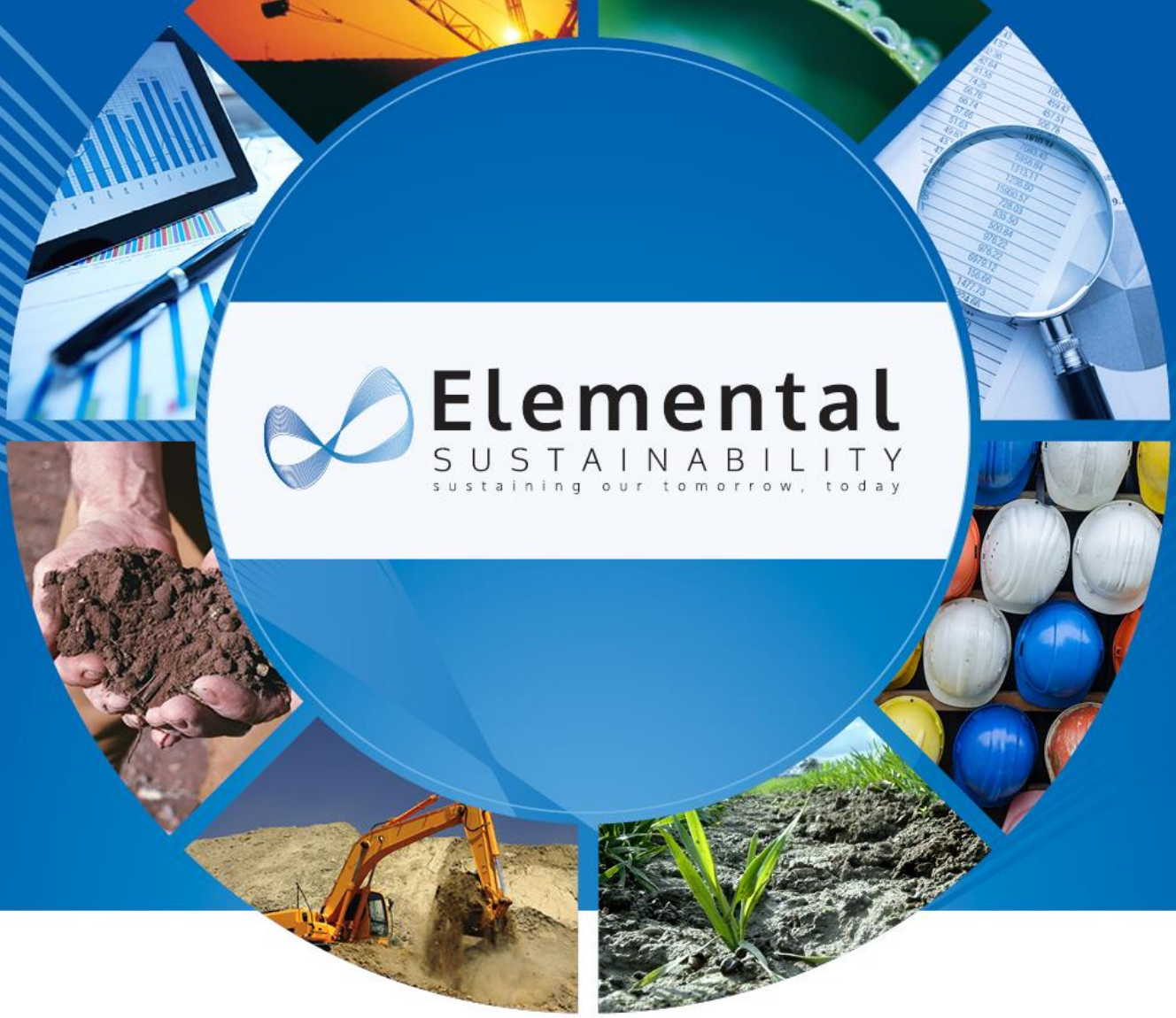

DRAFT SCOPING REPORT FOR THE 2 SEAM MINE PROJECT

DMRE REF: MP 30/5/1/2/3/2/1 (405)

Elemental REF: 2 SEAM EA_41

Submitted as part of an application process for environmental authorisation in terms of the National Environmental Management Act (Act 107 of 1998) [as amended], the National Waste Act, 2008 and National Water Act, 1998 in respect of listed activities that have been triggered by application in terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002) [as amended].

Applicant:	**2 Seam (Pty) Ltd.**
Contact Person:	**Mr. Paul Eskrine**
Tel:	**082 5237328**
Physical Address:	**Block 5 Bureau de Paul, 9 Corridor Crescent, Route N4 Business Park, Ben Fleur, Witbank, 103**

DOCUMENT HISTORY

Document Control, Quality Control and Disclaimer

Report	Draft Scoping Report for the proposed 2 Seam Mine Project		
Client	2 Seam (Pty) Ltd.		
Responsible Person	Contact Person: Mr. Paul Eskrine Contact nr.: 082 5237328 Email: paul@2seamcoal.com		
Report Number	2 Seam EA_41_2022	**Report Status**	Draft for PP
SAMRAD	(MP) 30/5/1/2/3/2/1 (405)	**Report Date**	24 June 2022

Report no	Date	Version	Status
0.0	15 June 2022	0.0	Public Review from 24 June 2022 to 25 July 2022

DOCUMENT REVIEWED BY

Responsible person	Date	Position
Sonja van de Giessen	15 June 2022	EAP – Senior Specialist
Du Toit Wilken	20 June 2022	Director: Senior Specialist

BASIS OF REPORT

This document has been prepared by Elemental Sustainability (Pty) Ltd (ELEMENTAL) with reasonable skill, care and diligence, and taking account of the manpower, timescales and resources devoted to it in accordance with the appointment from the applicant.

This document has been prepared in accordance with the Department of Mineral Resources and Energy (DMRE) Scoping Report template format and was informed by the guidelines posted on the official DMRE website. This is in accordance with the requirements of the Minerals and Petroleum Resources Development Act (Act No. 28 of 2002) (MPRDA). Given this, ELEMENTAL has included additional information in the Introduction section of the report that it deems necessary and relevant to setting the scene for the Environmental Impact Assessment (EIA) process. In addition, this report has been compiled in line with the requirements of the National Environmental Management Act (Act No. 107 of 1998) (NEMA) and EIA regulations (2014), as amended. A Water Use Licence in terms of the requirements of the National Water Act (Act 36 of 1998) will be submitted for the proposed project.

The information contained in this report is relevant only to the specific project area and plan. It cannot be relied on for any other purpose or by any other person.

Information reported herein may be based on the interpretation of public domain data collected by ELEMENTAL and/or information supplied by the applicant and/or its other advisors and associates. The data has been accepted in good faith as being accurate and valid.

This document may contain information of a specialised and/or highly technical nature and the reader is advised to seek clarification on any elements which may be unclear.

mineral resources
Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

DRAFT SCOPING REPORT

FOR LISTED ACTIVITIES ASSOCIATED WITH THE PROPOSED WASH PLANT, TAILINGS FACILITY, ADDITIONAL OPENCAST MINING AND RIVER DIVERSION, MPUMALANGA PROVINCE

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: 2 Seam (Pty) Ltd.
Contact Person: Mr. Paul Eskrine
Tel: 082 5237328
Physical Address: Block 5 Bureau de Paul, 9 Corridor Crescent, Route N4 Business Park, Ben Fleur, Witbank, 103
Postal Address: PO Box 20762
Durban North, 4016

FILE REFERENCE NUMBER SAMRAD: TBC
DMRE REFERENCE NUMBER: (MP) 30/5/1/2/3/2/1 (405)

EXECUTIVE SUMMARY

Elemental Sustainability (Pty) Ltd. (Elemental) was appointed by 2 Seam (Pty) Ltd. (hereafter referred to as 2 Seam) to submit an environmental authorisation application in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), the Waste Management Licence in terms of National Environmental Management Waste Act, 2008 (Act No. 59 of 2008) as amended, and the Environmental Impact Assessment Regulations of 2014, as amended, to Mining Right (MP) 30/5/1/2/3/2/1 (405) EM to include a coal washing plant, tailings facility and pollution control dams on site. In addition, 2 Seam is applying for an additional opencast pit to be located within the approved mining right boundary. As part of the application the two existing approved EMPR's will be combined into a single EMPR and the new activities will be added to the EMPR. The stream diversion of the Olifants River will also be applied for. A Section 102 application in terms of the Mineral and Petroleum Resources Development Act, 2002 (MPRDA) (Act 28 of 2002) will be submitted to the Department of Mineral Resources and Energy (DMRE) for the amendments to the Environmental Management Programme.

Mining Right Area

Opencast coal mining is undertaken on site using the truck and shovel, roll-over mining method, followed by rehabilitation. There is existing mining infrastructure on site (Pollution Control Dams, stockpiles, access and haul roads, offices and workshops).

The following infrastructure is proposed for this project:

- Additional Access / haul roads,
- Pollution Control Dam/s,
- Stormwater management facilities,
- Tailings Storage Facility;
- Contractor's Yard; and
- Processing plant.

Mining Schedule

The project life of mine ("LOM") will be extended by an additional five years.

Legislative Requirements

The most important legislation applicable to the proposed project are the following:

- *National Environmental Management Act (No. 107 of 1998) [as amended]* Section 28 (1):

Duty of Care and responsibilities to minimise and remediate environmental degradation. EIA Regulations, 2017 (Government Notices 983 and 984) [as amended];

- *EIA Regulations, 2014 (Government Notices 982) [as amended]:*
    - The proposed construction, operational and closure activities of the proposed development triggers listed activities that are listed in the EIA regulations for which a Scoping and Environmental Impact Assessment (EIA) process must be conducted;
- *Mineral and Petroleum Resources Development Act (Act No. 28 of 2002) [as amended]*
    - In order to apply for a mining right, an application was submitted on the Department of Mineral Resources' SAMRAD online application system;
- *National Water Act (Act No.36 of 1998) [as amended]*
    - Section 19: Prevention and remedying effects of pollution:
    - Section 21: Water Use Activities;
- *National Environmental Waste Act (Act No. 59 of 2008) [as amended]:*
    - Section 16: General duty in respect of waste management;
- *List of Waste Management Activities that have, or are likely to have a detrimental effect on the environment as promulgated in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) [as amended];*
- *Waste Classification and Management Regulations and Norms and Standards for the assessment of for landfill disposal and for disposal of waste to landfill, 2013 (Government Notice 634 – 635 of 2013) promulgated in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) [as amended];*
- *Regulations regarding the planning and management of residue stockpiles and residue deposits from a prospecting, mining, exploration or production operation (GN R. 632 of 2015);*
- *Mine Health and Safety Act, 1996 (Act No. 29 of 1996) [as amended];*
- *National Heritage Resources Act, 1999 (Act No. 25 of 1999);*
- *National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) [as amended];*
- *National Dust Control Regulations, 2013 (Government Notice 827 of 2013);*
- *Veld and Forest Fire Act, 1998 (Act No. 101 of 1998) [as amended];*
- *National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) [as amended];*
- *Alien and Invasive Species Regulations (Government Notice 598 of 2014) and Alien and Invasive Species List, 2016 in terms of NEMBA (Government Notice 864 of 2016);*
- *Conservation of Agricultural Resources Act (no. 43 of 1983);*
- *Deeds registries Act, 1937 (Act no. 47 of 1937) [as amended];*
- *Hazardous Substances Act, 1973 (Act 15 of 1973) [as amended];*
- *Hazardous Chemical Substances Regulations, 1995 (Government Notice 1179 of 1995); and*
- *Other relevant national, provincial, district and local municipality legislation and guidelines that may be applicable to the application. Some of these are discussed in the next section.*

Need and Desirability

According to the Department of Environmental Affairs' (DEA) 2017 Guideline on Need and Desirability, in order to describe the need for a development, it must be determined whether it is the right time for locating the type of land use and/or activity being proposed. To describe the desirability for a development, it must be determined, whether it is the right place for locating the type of land use and/or activity being proposed. Need and desirability can be equated to the concept of wise use of land which can be determined through asking the question: "what is the most sustainable use of land?" Considering the above, the need and desirability of an application must be addressed separately and in detail, and this is done within Section 5 of this document.

The main benefits of the proposed g project include:

- Continued direct economic benefits will be derived from wages, taxes and profits. Indirect economic benefits will be derived from the procurement of goods and services and the spending power of employees;
- Increased job security to employees already skilled in coal mining within the area;
- Continued skills development associated with mining;
- Continued contribution to the economic welfare of the surrounding community by continuing to creating employment opportunities;
- It will continue contributing to the upliftment of living standards and the health and safety of the local community.
- The project will result in economic mining of a known resource; and
- The net benefit to South Africa is a product produced specifically the local commodity market, specifically for electricity generation (Eskom) and the international market.

The project is aligned with the objectives of the MPRDA (Act 28 of 2002)

- To promote economic growth and mineral development in the Republic;
- To promote employment and advance the social and economic welfare of all South Africans;
- To ensure that the nation's mineral resources are developed in an orderly and ecologically sustainable manner while promoting justifiable social and economic development; and
- To ensure that mining developments contribute towards the social-economic development of the area in which they are operating.

As noted above, the Department of Environmental Affairs (DEA) published a Guideline on Need and Desirability (2017) in terms of the Environmental Impact Assessment (EIA) Regulations, 2014 (as amended). The key components are listed and discussed in the appropriate section below:

- Securing ecological sustainable development and use of natural resources; and
- Promoting justifiable economic and social development.

Alternatives

The sites for the project were determined the existing mining right and those described within the Mining Works Programme. Minerals can only be mined where identified and verified, therefore it was not practical to select any other sites. Alternatives are considered based on the following guidelines and discussed in Section 7:

(a) the property on which or location where it is proposed to undertake the activity;

(b) the type of activity to be undertaken;

(c) the design or layout of the activity;

(d) the technology to be used in the activity;

(e) the operational aspects of the activity; and

(f) the option of not implementing the activity).

The no-go option refers to the alternative of the proposed development not going ahead at all. This alternative will avoid potentially positive and negative impacts on the environment and the status quo of the area would remain, which is the conditions of the baseline environment without any deviations or expansions.
The implications of the no-go option will be evaluated as part of the EIA, focusing on comparing potential impacts from the proposed project with the status quo, and will be particularly relevant should it be found that detrimental impacts cannot be managed to an acceptable level.

Public Participation

This section describes the public participation process (PPP) undertaken to date, in line with Chapter 6 of the EIA Regulations (2014) (as amended). The process is undertaken to ensure compliance with the requirements in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) [as amended] (MPRDA) and the Environmental Impact Assessment Regulations (2014) [as amended]. The intention of the PPP is to inform I&APs, in sufficient detail, of the proposed project in order that I&APs may contribute meaningfully to the EIA process.

The PPP (Appendix D) will include the notification of I&APs through distribution of a Background Information Document (BID), the placement of a newspaper advertisement and the placement of site notices. A key aspect of public consultation is the notification of landowners, land occupiers and users within, and adjacent to, the application area. As part of the PPP, an I&AP database has been developed for the project.

The Draft Scoping Report will be placed out for public review from 24 June 2022 to 25 July 2022. All comments received will be included in the Final Scoping Report to be submitted to the competent authority for adjudication.

Mining Right Application

- A copy of the scoping report will be made available for a 30-day review and comment period, 24 June 2022 to 25 July 2022;

- An electronic copy of the scoping report can be downloaded. Please contact ELEMENTAL (send an email to **sonja@elemental-s.co.za or dutoit@elemental-s.co.za**) for the link from where the draft scoping report can be downloaded.

Please send all comments to **sonja@elemental-s.co.za or dutoit@elemental-s.co.za** with the following reference (2 SEAM EA_41).

Registration of any I&AP's can take place by registering on the I&AP's database by sending details of the I&AP to the EAP. Please feel welcome to contact us should you have further queries or require additional clarification.

All comments received from I&AP's and organs of state and responses sent will be included in the final Scoping Report to be submitted to the Competent Authority (CA).

DMRE review of the Scoping Report

On completion of the 30-day review period, a Final Scoping Report will be compiled which will include comments received during the I&AP review period. The electronic report will be submitted to the DMRE for its review and will also be uploaded on the SAMRAD system.

Specialist studies

As part of the Environmental Impact Assessment (EIA) phase for the proposed 2 Seam Mine Project the following specialist studies will be completed:

- Wetland Delineation Study;
- Heritage Assessment;
- Hydrogeological Assessment;
- Hydropedological Assessment;
- Hydrological Assessment (including water balance);
- Ecological Assessment;
- Geotechnical Assessment;
- Storm Water Management Plan (including floodlines and topography);
- Soils, Land Use and Capability and Agricultural Impact Study; and
- Closure Plan and Quantum Report.

Potential Impacts Associated with the Proposed Activity

Potential impacts have been provided within Section 11 below for the Construction, Operational and Closure Phases and a general summary is provided in Table 1 below.

Table 1: Summary of Potential Impacts during the various Project Phases

BIOPHYSICAL/SOCIO-ECONOMIC ASPECT	POTENTIAL IMPACT
Geology	**Loss and sterilisation of mineral resources:** The project has the potential to access mineral resources but also result in the loss and sterilisation of mineral resources. The project has the potential to sterilise mineral resources through the disposal of mineral resources onto mineralised waste facilities (waste rock dumps).
Topography	**Placement of waster rock and tailings:** The project has the potential to temporarily alter the topography by creation of stockpiles and infrastructure.
Soils and land capability	**Loss of soil and land capability:** The project has the potential to compromise soil resources through physical disturbance (erosion and compaction) and/or pollution.
Biodiversity	**Loss of biodiversity (terrestrial and aquatic):** Impacts on biological aspects, ecosystems.
Surface water	**Alteration of natural drainage patterns and pollution:** the proposed project may alter the surface water environment.
Groundwater	**Groundwater contamination and lowering of groundwater levels:** The project has the potential to contaminate groundwater resources and to lower groundwater levels through abstraction, dewatering of the aquifer.
Air	**Air quality:** The project may impact on the air quality and, therefore, will be subjected to an Air Quality Assessment.
Noise	**Disturbing noise levels:** The project has the potential to cause noise pollution through the mining activities.
Traffic	**Road disturbance and traffic safety:** The project may result in an increase of traffic in the area.
Vibration	**Vibration impact:** The project has the potential to cause vibration as a result of blasting taking place.
Heritage/cultural and palaeontological resources	**Loss of heritage/cultural and palaeontological resources:** The project does have the potential to damage heritage/cultural and palaeontological

	resources that may be present, and will be subjected to a Heritage assessment.
Socio-economic	**Positive and negative socio-economic impact:** The project has the potential for positive and negative socio-economic impacts. Positive impacts include job creation and stimulation of the local and regional economy as well as a parallel economy to mining. Negative impacts include the influx of job seekers and related issues of crime, disease and disruption to social structures
Land use	**Change in land use:** The proposed project has the potential to impact on surrounding land uses due to the additional surface infrastructure that will be constructed.

REASONED OPINION OF THE EAP

Based on the findings of the preliminary impact assessment during the scoping phase, the EAP is of the opinion that the scoping phase be approved, due to the positive social and economic impacts it can have on the local and regional communities. The potential negative impacts will be investigated in the EIA phase and mitigation measures for the impacts will be developed and included in the EMP.

Recommendations

To achieve appropriate environmental management standards and ensure that the findings of the environmental studies are implemented through physical measures, the recommendations from the scoping report are included within the Environmental Management Programme (EMP). The EMP will be based on all the information to be contained in the Environmental Impact Report (EIR) as well as all the specialists' reports.

Conclusion

The project is currently in the scoping phase. The project has the potential to impact on the biophysical, the cultural and socio-economic, as well as the landscape, both within, and surrounding project area. Input received during the scoping phase will allow for the meaningful assessment of all relevant biophysical, cultural and socio-economic issues. Potential impacts will be investigated by specialist studies. Stakeholder engagement will continue throughout the EIA process. The Environmental Management Programme (EMP) will contain more detailed mitigation measures which will also be incorporated into the Environmental Impact Report (EIR).

The proposed mitigation measures, if implemented, will reduce the significance of the majority of the identified impacts. It is therefore recommended, based on the assessment of the current available information, that the Scoping Report for the proposed development be accepted by the Competent Authority.

TABLE OF CONTENTS

1. INTRODUCTION 1
1.1 Summary of the Environmental Authorisation Requirements 1
1.2 Report Structure 2
2. CONTACT PERSON AND CORRESPONDENCE ADDRESS 7
2.1 Details of EAP who prepared the report 7
2.2 Expertise of the EAP 7
2.2.1 The qualifications of the EAP 7
2.2.2 Summary of the EAPs' Experience 7
2.2.3 Specialist Consultants 8
2.3 Description of the Property 9
2.4 Locality Map 10
3. DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY 12
3.1 Listed and specified activities 12
3.2 Description of the activities to be undertaken 22
3.2.1 Background 22
3.2.2 The Mineral Resource 24
3.3 Description of Mineral Processing Operations 30
3.3.1 Product and Markets 30
3.4 Current Mine Infrastructure 30
3.4.1 Waste Classification 31
3.4.2 Hazardous Waste 31
3.4.3 Potable Water Supply 33
3.4.4 Sewage 33
3.4.5 Mine Access Road 33
3.4.6 Security and Access Control 33
3.5 Proposed Infrastructure 33
3.5 Existing and Proposed Activities 35
4. POLICY AND LEGISLATIVE CONTEXT 39
5. NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES 49
6. PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED 58
6.1 Explanation of Timeframes 58
6.2 Explanation of the production build up period once production commences 59
7. DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED SITE 60
7.1 Details of Location Alternatives 61
7.1.1 Details of Development Property 61

7.1.2 Consideration of Property 61
7.1.3 Location, Layout or Design of the Activity 61
7.2 Process Alternatives 62
7.2.1 Disposal of Waste 62
7.2.2 Water Supply for Dust Suppression 62
7.2.3 Mining Method 62
7.3 Technological Alternatives 62
7.3.2 Processing Technology to be used in the Activity 62
7.3.1 Transportation of Coal 63
7.4 Activity Alternatives 63
7.5 No Go Option 63
8. DETAILS OF THE PUBLIC PARTICIPATION PROCESS TO BE FOLLOWED 64
8.1 Public Participation 64
8.2 Legal Framework 64
8.2.1 Section 39: Activity on Land owned by Person other than the Proponent - Subregulation 1 and 2(a), (b) and (c) 65
8.2.2 Section 41: Public Participation Process 65
8.2.3 Section 42: Register of Interested and Affected Parties 70
8.2.4 Section 43: Registered Interested and Affected Parties Entitled to Comment on Reports and Plans 70
8.2.5 Section 44: Comments of Interested and Affected Parties to be recorded in reports submitted to competent authority 71
9. THE ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE SITE: BASELINE ENVIRONMENT 74
9.1 Topography 74
9.2 Geology 75
9.2.1 Regional Geology 75
9.2.2 Local Geology 75
9.3 Climate 77
9.3.1 Temperature 77
9.3.2 Precipitation and Evaporation 77
9.3.3 Mean Monthly WInd Direction and Speed 78
9.4 Surface Water 80
9.4.1 Water Management Area 80
9.4.2 Surface Water Hydrology 80
9.4.3 Mean Annual Runoff 81
9.4.4 Surface Water Quality 81
9.4.5 Resources Class and River Health Receiving Water Quality Objectives and Reserve 84
9.5 Wetlands 84

9.6 Hydrogeology 85
9.6.1 Aquifer Classification 85
9.6.2 Groundwater Levels 85
9.6.3 Groundwater Quality 85
9.6.4 Potential Pollution Source Identification 88
9.7 Water Authority 88
9.8 Flora (Plant Life) 88
9.8.1 Regional vegetation 88
9.8.2 Eastern Highveld Grassland 90
9.8.3 RegionalConservation Areas 90
9.9 Fauna 92
9.10 Agricultural and Land Capability 93
9.11 Soil types 93
9.11.1 Soil Fertility and Erodibiliity 93
9.11.2 Soil Depth 93
9.11.3 Land Capability 93
9.11.4 Class II: Arable 94
9.11.5 Class IV: Medium Potential 94
9.12 Air Quality 96
9.13 Noise 97
9.14 Visual 98
9.15 Archaeology and Heritage 98
9.16 Socio-Economic Environment 98
9.16.1 Nkangala District Municipality 99
9.16.2 eMalahleni Local Municipality 100
10. DESCRIPTION OF SPECIFIC ENVIRONMENTAL FEATURES AND INFRASTRUCTURE ON THE SITE 101
10.1 Environmental Features 101
10.2 Existing Infrastructure on the Study Area and in Close Proximity 101
11. IMPACTS IDENTIFIED 101
11.1.1 Methodology used in determining the significance of environmental impacts 117
11.1.2 Environmental Impact Assessment (EIA) Regulations, 2017 [as amended] requirements 117
11.1.3 Elemental Sustainability Impact Assessment Methodology 117
12. THE POSITIVE AND NEGATIVE IMPACTS AND ALTERNATIVES 120
12.1 The possible mitigation measures that could be applied and the level of risk 125
12.2 The outcome of the site selection Matrix. Final Site Layout Plan 129
12.2.1 Motivation where no alternative sites were considered 129
12.2.2 Statement motivating the preferred site 129

13. PLAN OF STUDY FOR THE ENVIRONMENTAL IMPACT ASSESMENT PROCESS 129
13.1 Description of alternatives to be considered including the option of not going ahead with the activity. 129
13.2 Description of the aspects to be assessed as part of the environmental impact assessment process 130
13.3 Description of aspects to be assessed by specialists 132
14. PARTICULARS OF THE PUBLIC PARTICIPATION PROCESS WITH REGARDS TO THE IMPACT ASSESSMENT PROCESS THAT WILL BE CONDUCTED.....139
14.1 Steps to be taken to notify interested and affected parties 139
14.2 Next Phases of The Public Participation Process 139
14.2.1 Details of the engagement process to be followed 139
14.2.2 Description of the information to be provided to Interested and Affected Parties.....140
15. DESCRIPTION OF THE TASKS THAT WILL BE UNDERTAKEND DURING THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS 140
16. MEASURES TO AVOID, REVERSE, MITIGATE, OR MANAGE IDENTIFIED IMPACTS AND TO DETERMINE THE EXTENT OF THE RESIDUAL RISKS THAT NEED TO BE MANAGED AND MONITORED 143
17. OTHER INFORMATION REQUIRED BY THE COMPETENT AUTHORITY.....143
17.1 Impact on the socio-economic conditions of any directly affected person 143
17.2 Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act 143
18. OTHER MATTERS REQUIRED IN TERMS OF SECTIONS 24 (4) (a) AND (b) OF THE ACT 144
19. REASONED OPINION OF THE EAP 144
20. UNDERTAKING BY THE EAP 145
21. REFERENCES.....146

TABLE OF FIGURES

Figure 1: Regional Locality of the Mining Project 10
Figure 2: Mining right area of 2 Seam Mine 11
Figure 3: Current openbox cuts and future layout plan for 2 Seam Mine..... 23
Figure 4: Total coal Resources remaining at 2 Seam Mine 26
Figure 5: Location of coal reserves (approved and proposed)..... 26
Figure 6: Typical Bord and Pillar Layout 28
Figure 7: Typical Rehabilitation Process (Wells et al., 1992) 29
Figure 8: Proposed Coal Wash Plant Layout 34
Figure 9:Original dug river diversion site 35
Figure 10: Topography of the 2 Seam Mine 74
Figure 11: Regional Geology 76
Figure 12: Monthly rainfall distribution at the 2 Seam Pty Ltd Mine (GCS, 2020) 78
Figure 13: S-Pan Evaporation for 2 Seam Pty Ltd mine (WRC, 2015) 79
Figure 14: Surface Hydrology for 2 Seam Mine 81
Figure 15: Surface water monitoring points 82
Figure 16: Groundwater monitoring points for March 2022..... 86

Figure 17: Vegetation group within the 2 Seam Mine 89
Figure 18: Protected areas located around the proposed opencast mine 91
Figure 19: Mpumalanga Biodiversity Sector Plan 92
Figure 20: Land capability of 2 Seam mine area 95
Figure 21: Land use within and around the project area 96
Figure 22: Dust Monitoring Results March to April 2022 97

LIST OF TABLES

Table 1: Summary of Potential Impacts during the various Project Phases x
Table 2: Report Structure 3
Table 3: Details of EAP 7
Table 4: Specialist Studies to be undertaken for the proposed project 8
Table 5: Description of the property 9
Table 6: Listed and specified activities 13
Table 7: Key aspects of the various pit designs and proposed mining schedules 25
Table 8: List of main action, activities or processes on site and per phase 36
Table 9: Policy and Legislative Context 39
Table 10: Need and desirability considerations 50
Table 11: Summary of issues raised 73
Table 12 : Mean monthly temperature 77
Table 13: Mean monthly wind direction and speed 78
Table 14: Summary of Rainfall and S-Pan Evaporation Data (EcoElementum, 2019b) 79
Table 15: Surface Water Quality Results for March 2022) 83
Table 16: Water Resource Classes per IUA and Ecological Categories per Biophysical Node 84
Table 17: Groundwater Monitoring results for March 2022 87
Table 18: Demographic Statistics for the Nkangala District Municipality 99
Table 19: Impacts during the Construction phase activity specific impacts 103
Table 20: Impacts during the operational phase – activity specific impacts 107
Table 21: Impacts during the closure phase – general impacts 111
Table 22: Closure and post-closure specific impacts 114
Table 23: Impacts as a result of not implementing the proposed development 115
Table 24: Mitigation measures (Construction, Operational and Closure Phase) 125
Table 25: Description of aspects to be assessed by specialists 132
Table 26: EIA Tasks and Timing 140

LIST OF APPENDICES

APPENDIX A : QUALIFICATIONS OF THE EAP AND DECLARATION

APPENDIX B : LOCALITY MAP

APPENDIX C : INFRASTRUCTURE LAYOUT PLANS

APPENDIX D : PUBLIC PARTICIPATION PROCESS

ABBREVIATIONS

ARC	Agricultural Research Council
BPEO	Best Practicable Environmental Option
CS	Community Survey
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs (now DEFF)
DEFF	Department of Environment, Forestry and Fisheries
DFS	Definitive Feasibility Study
DMR	Department of Mineral Resources (now DMRE)
DMRE	Department of Mineral Resources and Energy
DWS	Department of Water and Sanitation (now DHSWS)
EAP	Environmental Assessment Practitioner
ECA	Environmental Conservation Act (Act 73 of 1989)
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIR	Environmental Impact Assessment Report
EMPR	Environmental Management Programme
GNR	Government Notice Regulation
I&APs	Interested and Affected Parties
IDP	Integrated Development Programme
IEM	Integrated Environmental Management
IHAS	Invertebrate Habitat Assessment System
IHIA	Intermediate Habitat Integrity Assessment
IWUL	Integrated Water Use License
IWULA	Integrated Water Use License Application
LED	Local Economic Development
LOM	Life of Mine
MAMSL	Meter Above Mean Sea Level
MPRDA	Mineral and Petroleum Resources Development Act (Act 28 of 2002)
MRA	Mining Right Application
NEMA	National Environmental Management Act (Act 107 of 1998)
NEMAQA	National Environmental Management: Air Quality Act, 39 of 2004
NEMBA	National Environmental Management: Biodiversity Act (Act 10 of 2004)
NEMWA	National Environmental Management: Waste Act (Act 59 of 2008)
NFA	National Forest Act (Act 84 of 1998)
NHRA	National Heritage Resources Act (Act 25 of 1999)

NWA	National Water Act (Act 36 of 1998)
PAIA	Promotion of Access to Information Act (Act 2 of 2000)
PAJA	Promotion of Administrative Justice Act (Act 3 of 2000)
PES	Present Ecological State
PM10	Thoracic Particulate Matter
PM2.5	Inhalable Particulate Matter
PPP	Public Participation Process
ROM	Run of Mine
RVI	Riparian Vegetation Index
SAHRA	South African Heritage Resources Agency
SANRAL	South African National Roads Agency Limited
SANS	South African National Standard
SASS	South African Scoring System
TSF	Tailings Storage Facility
TPA	Tons Per Annum
TSP	Total Suspended Particulates

IMPORTANT NOTICE

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

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

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

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

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

OBJECTIVE OF THE SCOPING PROCESS

The objective of the scoping process is to, through a consultative process—

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

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1. INTRODUCTION

Elemental Sustainability (Pty) Ltd. (Elemental) was appointed by 2 Seam (Pty) Ltd. (hereafter referred to as 2 Seam) to submit an environmental authorisation application in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and the Waste Management Licence in terms of National Environmental Management Waste Act, 2008 (Act No. 59 of 2008) as amended, and the Environmental Impact Assessment Regulations of 2014, as amended, to Mining Right (MP) 30/5/1/2/3/2/1 (405) EM to include a coal washing plant, tailings facility and pollution control dams on site. In addition, 2 Seam is applying for an additional opencast pit to be located within the approved mining right boundary. As part of the application the two existing approved EMPR's will be combined into a single EMPR and the new activities will be added to the EMPR. The stream diversion of the Olifants River will also be applied for. A Section 102 application in terms of the Mineral and Petroleum Resources Development Act, 2002 (MPRDA) (Act 28 of 2002) will be submitted to the Department of Mineral Resources and Energy (DMRE) for the amendments to the Environmental Management Programme.

2 Seam has three approved water use licences (WULs) in terms of the National Water Act (NWA) (Act 36 of 1998) for the existing infrastructure and activities on site. The reference numbers for the three WULs are Licence No.: 06/B11B/ AICGJ/7070 approved on 06 April 2018, Licence No.: 06/B11B/ACGIJ/10048 approved on 31 March 2021 and Licence No: 06/B11B/CGIJ/29/3 approved on 12 May 2021. 2 Seam will be applying for a WUL for the additional Section 21 activities that are triggered in terms of Section 40 of the NWA.

1.1 Summary of the Environmental Authorisation Requirements

Prior to the commencement of the proposed project, environmental authorisations are required from the following competent authorities:

- Environmental Authorisation from the DMRE in terms of the NEMA. The proposed project incorporates several activities listed in the Environmental Impact Assessment Regulations (EIA Regulations): Listing Notice 1, 2 and 3, 2014 published in Government Notice (GN) No. 983, 984 and 985 of 4 December 2014 and amended in June 2021. The EIA regulations applicable in this study, are the EIA Regulations, 2014 published in GN No. 982 of 4 December 2014 and amended in June 2021.
- A Waste Management License (WML) from the DMRE in terms of the NEM:WA. The proposed project incorporates waste management activities listed in GNR 921 of 29 November 2013, as amended.
- A Water Use License (WUL) from the Department of Water and Sanitation (DWS) in terms of the National Water Act, 1998 (No. 36 of 1998) (NWA). The proposed project incorporates water uses in terms of Section 21 of the NWA.

The applicable listed activities and water uses are listed in Section 3.1 (Table 6) of this report. An integrated NEMA and NEM:WA application has been lodged with the DMRE. Furthermore, a Section 102 in terms of the requirements of the MPRDA, as amended, will be submitted to the DMRE. The WUL application will be submitted to the DWS.

Additional permits or licenses that may be required for the project include:

- approval from the relevant Department of Roads and Transport for upgrading any roads or intersections.
- Permit/s in terms of the National Heritage Act, 1999 (No. 25 of 1999) (NHRA), the Ordinance on Exhumations, 12 of 1980, and/or the Human Tissues Act, 1983 (No. 65 of 1983 if any heritage sites (including graves) are damaged or removed.

This list will be refined, as may be required, during the course of the EIA process.

1.2 Report Structure

This report has been compiled in accordance with the 2014 NEMA EIA Regulations as amended. A summary of the report structure, and the specific sections that correspond to the applicable regulations, is provided in Table 2 below.

Table 2: Report Structure

Environmental Regulation	Description	Section in Report
NEMA Regulation 982 (2014) as amended by GNR 326 (2017)		
Appendix 2(2)(a):	Details of – The EAP who prepared the report; and The expertise of the EAP, including a curriculum vitae;	Section 2.1
Appendix 2(2)(b):	The location of the activity. Including – The 21-digit Surveyor General code of each cadastral land parcel; Where available, the physical address and farm name; Where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	Section 2
Appendix 2(2)(c):	A plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is – A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or On a land where the property has not been defined, the coordinates within which the activity is to be undertaken;	Appendix C
Appendix 2(2)(d):	A description of the scope of the proposed activity, including – All listed and specified activities triggered; A description of the activities to be undertaken, including associated structures and infrastructure;	Section 3

Environmental Regulation	Description	Section in Report
Appendix 2(2)(e):	A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process;	Section 4
Appendix 2(2)(f):	A motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	Section 5
Appendix 2(2)(h):	A full description of the process followed to reach the proposed preferred activity, site and location within the site, including – Details of all alternatives considered; Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; 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; The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; The impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts – Can be reversed; May cause irreplaceable loss or resources; and Can be avoided, managed or mitigated;	Section 6 Section 7 Section 8 Section 9 Section9.16 Section 11 Section 12

Environmental Regulation	Description	Section in Report
	The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives; 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; The possible mitigation measures that could be applied and level of residual risk; The outcome of the site selection matrix; If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and A concluding statement indicating the preferred alternatives, including preferred location of the activity;	
Appendix 2(2)(i):	A plan of study for undertaking the environmental impact assessment process to be undertaken, including – A description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity; A description of the aspects to be assessed as part of the environmental impact assessment process; Aspects to be assessed by specialists; A description of the proposed method of assessing the environmental aspects, including a description of the proposed method assessing the environmental aspects to be assessed by specialists;	Section 13 and Section 14

Environmental Regulation	Description	Section in Report
	A description of the proposed method of assessing duration and significance; An indication of the stages at which the competent authority will be consulted; Particulars of the public participation process that will be conducted during the environmental impact assessment process; and A description of the tasks that will be undertaken as part of the environmental impact assessment process; Identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.	
Appendix 2(2)(j)	An undertaking under oath or affirmation by the EAP in relation to – The correctness of the information provided in the report; The inclusion of comments and inputs from stakeholders and interested and affected parties; and Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;	Section 20 and Appendix A
Appendix 2(2)(k):	An undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected parties on the plan of study for undertaking the environmental impact assessment;	Appendix A
Appendix 2(2)(l):	Where applicable, any specific information required by the competent authority; and	N/A
Appendix 2(2)(m):	Any other matter required in terms of section 24(4)(a) and (b) of the Act.	N/A

2. CONTACT PERSON AND CORRESPONDENCE ADDRESS

2.1 DETAILS OF EAP WHO PREPARED THE REPORT

Name of the Practitioner:	Sonja van de Giessen
Tel No.:	083 3884633
E-mail address:	sonja@elemental-s.co.za

2.2 EXPERTISE OF THE EAP

2.2.1 THE QUALIFICATIONS OF THE EAP

In terms of Regulation 13 of the 2014 EIA Regulations (Government Notice R. 982) as amended, an independent Environmental Assessment Practitioner (EAP), must be appointed by the applicant to manage the application. Elemental Sustainability (Pty) Ltd. has been appointed by the Applicant as the EAP and is compliant with the definition of an EAP as defined in Regulations 1 and 13 of the EIA Regulations and Section 1 of the NEMA. This includes, inter alia, the requirement that Elemental Sustainability is:

- Objective and independent;
- Has expertise in conducting EIA's;
- Complies with the NEMA, the Regulations and all other applicable legislation;
- Takes into account all relevant factors relating to the application; and
- Provides full disclosure to the applicant and the relevant environmental authority.

The declaration of independence of the EAP and the Curriculum Vitae (indicating the experience with environmental impact assessments and relevant application processes) are attached as Appendix A to this report.

2.2.2 SUMMARY OF THE EAPS' EXPERIENCE

Attach the EAP's curriculum vitae as Appendix A.

Please refer to Table 3 for a summary of the qualification and experience of the EAP, as well as Appendix A of this report.

Table 3: Details of EAP

Environmental Consultants:	Elemental Sustainability (Pty) Ltd
Postal address:	P.O. Box 39080 Moreletapark, Pretoria 0044

Telephone:	083 388 4633
Fax:	None
Author EAP	Sonja van de Giessen (*Pr.Sci.Nat* and EAPASA)
Qualifications:	University of North West, MSc Environmental management – 2018 University of South Africa, BSc Hons Environmental Science – 2010 Tshwane Technical College, B. Tech Degree Nature Conservation – 1998 Tshwane Technical College, Diploma Nature Conservation - 1995
Professional affiliation(s):	Natural Professional Scientist (*Pr. Sci.Nat.* Number: 400084/18) Environmental Assessment Practitioner South Africa (EAPASA Number: 2019/1496)
Expertise of the EAP:	Environmental management, specifically the mining industry sector, focusing on Environmental Impact Assessments, Environmental Management Programmes, Water Use Licence Applications and Integrated Water and Waste Management Plans and Environmental Auditing.
Experience	Approximately 10 years of experience.

2.2.3 SPECIALIST CONSULTANTS

Specialist consultants will be appointed to provide discipline specific input during the EIA phase and the following specialist disciplines are proposed at this stage:

Table 4: Specialist Studies to be undertaken for the proposed project

Specialist Studies		Included	Existing to be update	Motivation
1	Agricultural Impact Assessment		X	
2	Landscape/Visual Impact Assessment			X
3	Archaeological and Cultural Heritage Impact Assessment		X	
4	Palaeontology Impact Assessment		X	
5	Terrestrial Biodiversity Impact Assessment	X		
6	Aquatic Biodiversity Impact Assessment	X		
7	Hydrology Assessment	X		
8	Noise Impact Assessment			X
9	Radioactivity Impact Assessment			X
10	Traffic Impact Assessment			X
11	Geotechnical Assessment	X		
12	Climate Impact Assessment			X
13	Health Impact Assessment			X
14	Socio-Economic Assessment			X
15	Ambient Air Quality Impact Assessment		X	
16	Seismicity Assessment			X
17	Plant Species Assessment	X		
18	Animal Species Assessment	X		

19	GNR 1147 – Closure Assessment		X	
20	Waste Classification		X	
21	Hydro pedological	X		

In line with NEMA GNR 982 as amended, Appendix 6, the details of the relevant specialists, a summary of their expertise, as well as their declarations of independence will be included in their respective reports that will be appended to the EIA Report.

2.3 DESCRIPTION OF THE PROPERTY

Table *5* provides a property description of the property.

Table 5: Description of the property

Farm Name:	Portions 6, 29, 31 and 50 of the Farm Vlaklaagte 45 IS Portion RE of the Farm Lourens 472 IS.			
Application area (Ha)	Existing MR: ±695ha Area of the proposed activities: ±25ha			
Magisterial district:	Nkangala District Municipality			
Distance and direction from nearest town	30km south of eMalahleni 11km northwest of Kriel			
21 digit Surveyor General Code for each farm portion	**Farm Name**	**Landowner**	**21 Digit SG Code**	**Title Deed Nr**
	Lourens 472 IS	Exxaro Coal Central Dorstfontein West Regional	T0IS00000000047200000	T3712/2010
	Portion 31 of the Farm Vlaklaagte 45 IS	SOUHT 32 SA COAL HOLDINGS PTY LTD	T0IS00000000004500031	T65609/1991
	Portion 29 of the Farm Vlaklaagte 45 IS	South 32 SA Coal Holdings Pty Ltd.	T0IS00000000004500029	T65609/1991
	Lourens 472 IS	Exxaro Coal Central Dorstfontein West Regional	T0IS00000000047200000	T3712/2010

	Portion 31 of the Farm Vlaklaagte 45 IS	South 32 SA Coal Holdings Pty Ltd.	T0IS00000000004500031	T65609/1991

2.4 LOCALITY MAP

(Show nearest town, scale not smaller than 1:250000 attached as Appendix B).

The project is situated in the Mpumalanga province of South Africa, which is governed locally by the eMalahleni Local Municipality and regionally by the Nkangala District Municipality. The closest town to the project is Kriel (approximately 11 km southwest of the 2 Seam Mine). The R547 provincial road provides access to the town. Figure 1 indicates the regional location of the 2 Seam Mine. The locality map is also appended in Appendix B.

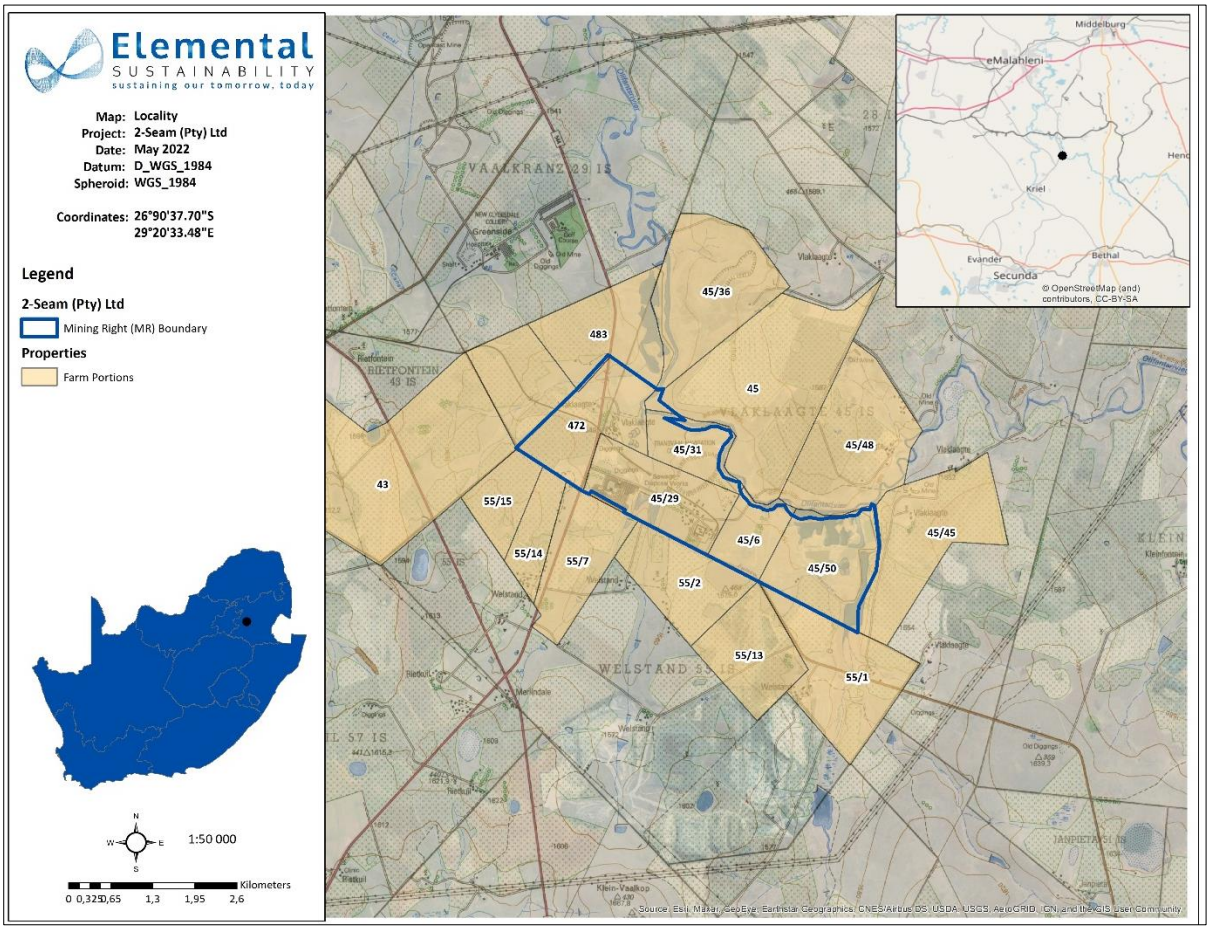

Figure 1: Regional Locality of the Mining Project

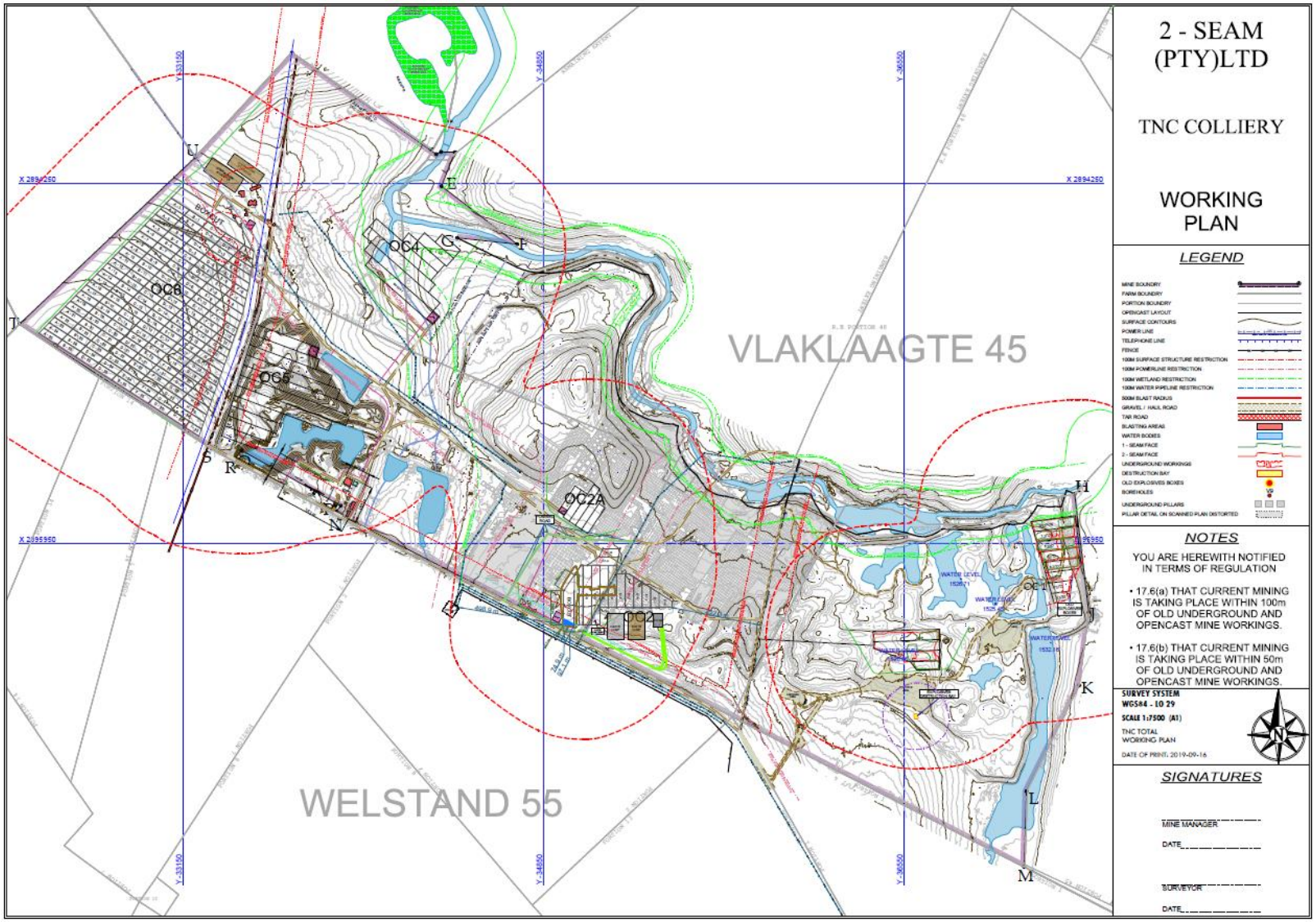

Figure 2: Mining right area of 2 Seam Mine

3. DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY

3.1 LISTED AND SPECIFIED ACTIVITIES

(Provide a plan drawn to a scale acceptable to the competent authority but not less than 1: 10 000 that shows the location, and area (hectares) of all the aforesaid main and listed activities, and infrastructure to be placed on site and attach as Appendix C)

Table *6* provides the listed and specified activities that are applicable to the proposed 2 Seam coal wash plant, the tailings facility the stream diversion and the additional opencast pit on site. A description of the EIA Listed Activities is also included. Also refer to the layout plans included in Appendix C.

Table 6: Listed and specified activities

Relevant legislation	Activity		Type of Authorisation Required	Competent Authority (CA)
NEMA and NEMWA	**Listing Notice 1 (GN 983 of 2014, as amended)**		Section 102, Environmental Authorisation, Water Use License, and Waste Management License for all Tailings Facility (permanent or temporary) in terms of NEM: WA.	Mpumalanga Department Mineral Resources and Energy and Department of Water and Sanitation
	Activity 9: *The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or storm water* *(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 bulk transportation of water or storm water or storm water drainage inside a road reserve or railway line reserve; or* *(b) where such development will occur within an urban area.*	Stormwater Infrastructure		
	Activity 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* *with an internal diameter of 0,36 metres or more; or* *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.*	Pipelines for process water		

Relevant legislation	Activity		Type of Authorisation Required	Competent Authority (CA)
	Activity 11: *The development of facilities or infrastructure for the transmission and distribution of electricity* *(i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; or* *(ii) inside urban areas or industrial complexes with a capacity of 275 kilovolts or more; excluding the development of bypass infrastructure for the transmission and distribution of electricity where such bypass infrastructure is* *(a) temporarily required to allow for maintenance of existing infrastructure;* *(b) 2 kilometres or shorter in length;* *(c) within an existing transmission line servitude; and*	Powerlines to plant		
	Activity12: *The development of* *i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or* *(ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs* *a) within a watercourse;* *(b) in front of a development setback; or* *(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a water course excluding*	Pollution Control Dam		

Relevant legislation	Activity		Type of Authorisation Required	Competent Authority (CA)
	aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; *(bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;* *(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;* *(dd) where such development occurs within an urban area;* *(ee) where such development occurs within existing roads, road reserves or railway line reserves; or* *(ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of the development and where indigenous vegetation will not be cleared.*			
	Activity 13: *The development of facilities or infrastructure for the off stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 16 in Listing Notice 2 of 2014.*	Pollution Control Dam		
	Activity 19: *The infilling or depositing of any material of more than [5] 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than [5] 10 cubic metres from [—(i)] a watercourse;*	River diversion PCDs and Opencast Mining		

Relevant legislation	Activity		Type of Authorisation Required	Competent Authority (CA)
	[(ii) the seashore; or iii)the littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or estuary, whichever distance is the greater—] *but excluding where such infilling, depositing, dredging, excavation, removal or moving—* *a) will occur behind a development setback;* *b) is for maintenance purposes undertaken in accordance with a maintenance management plan; [or]* *c) falls within the ambit of activity 21 in this Notice, in which case that activity applies;* *d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or* *e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.*			
	Activity 21D: *Any activity including the operation of that activity which requires an amendment or variation to a right or permit in terms of section 102 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity contained in this Listing Notice or in Listing Notice 3 of 2014, required for such amendment.*	Amendment to Mining Right		
	Activity 24: *The development of a road—*	Additional haul roads		

Relevant legislation	Activity		Type of Authorisation Required	Competent Authority (CA)
	(i) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or *(ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres; but excluding a road—* *(a) which is identified and included in activity 27 in Listing Notice 2 of 2014;* *(b) where the entire road falls within an urban area; or* *c) which is 1 kilometre or shorter*			
	Activity 27: *The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for* *(i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.*	Opencast mining and PCD		
	Activity 30: *Any process or activity identified in terms of section 53(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).*	Opencast Mine, Tailings Facility, Haul road, PCDs, Contractors Yard and plant area		
	Activity 56: *The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre(*	Haul road		

Relevant legislation	Activity		Type of Authorisation Required	Competent Authority (CA)
	i) where the existing reserve is wider than 13,5 meters; or *(ii) where no reserve exists, where the existing road is wider than 8 metres; excluding where widening or lengthening occur inside urban areas.*			
	Listing Notice 2 (GN 984 of 2014, as amended)			
	Activity 6: *The development of facilities or infrastructure for any process or activity which requires a permit or license or an amended permit or license in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent.*	Opencast Mine, Tailings Facility, Haul road, PCDs, Contractors Yard and plant area		
	Activity 15: *The clearance of an area of 20 hectares or more of indigenous vegetation (Alternatively more than >1 ha consequently triggering Activities from Listing Notice 1, Activity 27).*	Opencast Mine, Tailings Facility, Haul road, PCDs, Contractors Yard and plant area		
	Activity 16: *The development of a dam where the highest part of the dam wall, as measured from the outside toe of the wall to the highest part of the wall, is 5 metres or higher or where the highwater mark of the dam covers an area of 10 hectares or more.*	PCDs may trigger this activity		
	Listing Notice 3 (GN 985 of 2014 as amended)			
	Activity 4: *The development of a road wider than 4 metres with a reserve less than 13,5 metres.*	Haul roads		

Relevant legislation	Activity		Type of Authorisation Required	Competent Authority (CA)
	(f) Mpumalanga *((i) Outside urban areas:* *(aa) A protected area identified in terms of NEMPAA, excluding disturbed areas;* *(bb) National Protected Area Expansion Strategy Focus areas;* *(cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;* *(dd) Sites or areas identified in terms of an international convention;* *(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* *(ff) Core areas in biosphere reserves; or* *(gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas, where such*			
	Activity 12: *The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.* ***f) Mpumalanga*** *(i) Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area*	Opencast Mine, Tailings Facility, Haul road, PCDs, Contractors Yard and plant area		

Relevant legislation	Activity		Type of Authorisation Required	Competent Authority (CA)
	that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; *(ii) Within critical biodiversity areas identified in bioregional plans; or* *(iii) On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning or proclamation in terms of NEMPAA.*			
	Activity 18: *The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre.* *(f) Mpumalanga* *(i) Outside urban areas:* *(aa) A protected area identified in terms of NEMPAA, excluding conservancies;* *(bb) National Protected Area Expansion Strategy Focus areas;* *(cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;* *(dd) Sites or areas identified in terms of an international convention;* *(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* *(ff) Core areas in biosphere reserves; or* *(gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from*	Road development		

Relevant legislation	Activity		Type of Authorisation Required	Competent Authority (CA)
	the core area of a biosphere reserve, where such areas comprise indigenous vegetation; or			
	NEM:WA GNR 632, as amended			
	Activity B1: *The storage of hazardous waste in lagoons excluding storage of effluent, wastewater or sewage*	Tailings Facility and Pollution Control Dams		
	Activity B7: *The disposal of any quantity of hazardous waste to land.*	Tailings Facility		
	Activity B10: *The construction of a facility for a waste management activity listed in Category B of this Schedule (not in isolation to associated waste management activity).*	Tailings Facility and Pollution Control Dams		

3.2 DESCRIPTION OF THE ACTIVITIES TO BE UNDERTAKEN

(Describe Methodology or technology to be employed, and for a linear activity, a description of the route of the activity)

This section provides a detailed description of the current and proposed activities at the 2 Seam Mine. The aim of the project description is to indicate the activities that are currently being undertaken at the 2 Seam Mine as well as the proposed future activities that are being applied for in this application. Furthermore, the detailed mine/project description is presented to facilitate the understanding of the project related activities, which result in the impacts identified and assessed, and for which management measures have been proposed.

3.2.1 BACKGROUND

2 Seam is an existing opencast coal mine, consisting of the original 2 Seam Mine Blocks OC1, OC2, OC2A, OC4, OC5 and OC6. The 2 Seam Mine Block OC6 and Block OC06A project fall within the footprint of historical underground mining operation known as Transvaal Navigation Colliery (TNC). 2 Seam has existing Run of Mine (RoM) stockpile areas located on rehabilitated opencast areas. 2 Seam holds one mining right (Mining Right (MP) 30/5/1/2/3/2/1 (405) EM). It produces coal for the local market.

The roll over strip mining method is utilised to extract coal. The existing opencast operations have an approximate extent of 257 ha (some of this area has already been mined and other areas are currently being mined in accordance with the previous approved mine plan) while the applicant wishes to authorise an additional 11 ha of opencast mining.

2 Seam is planning to add additional opencast mining areas (i.e., OC04A and OC04B) within the existing mining right areas to extend the life-of-mine (LoM). As such a MPRDA S102 amendment process is being undertaken by the mine, supported by the integrated EIA/WML and WULA applications. The EIA process will result in a consolidation of the numerous authorisation processes that have been undertaken to date to produce a single overarching EMPr for holistic management of the the 2 Seam Mine going forward.

2 Seam Mine will be applying for the relevant approvals to cover their extended LoM which will include future opencast and associated infrastructure. Various amendments to the existing EA/EMP as well as IWUL will also be applied for to align the specific conditions with the current status of the mine as well as to provide more clarity on certain conditions. Furthermore 2 Seam will be applying for a coal washing plant and tailings facility on site, associated stormwater management infrastructure (PCDs and clean and dirty water berms) and a contractors yard.

Figure 3 indicates the existing and proposed boxcut areas, the existing infrastructure, as well as the planned infrastructure for the 2 Seam Mine.

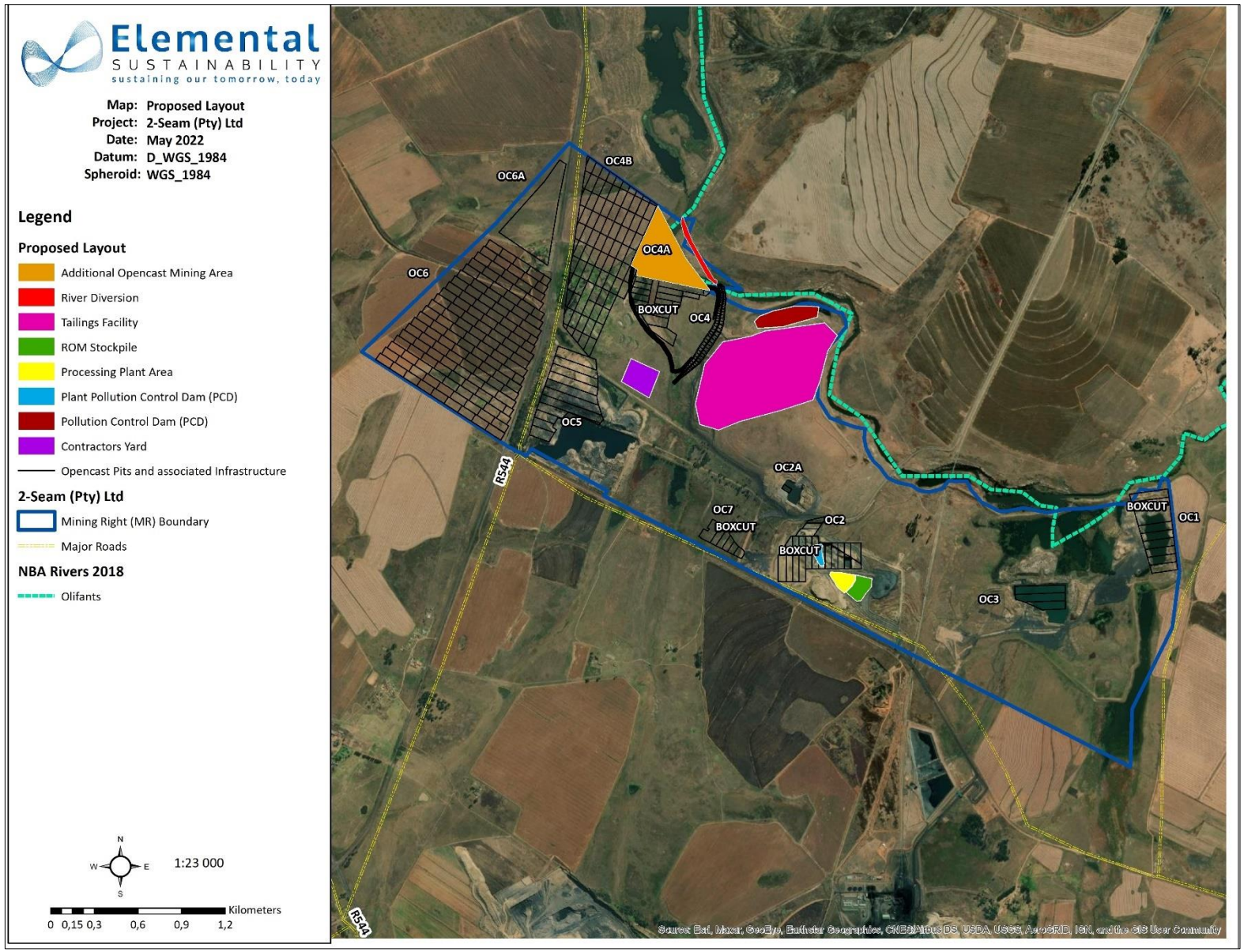

Figure 3: Current opencast cuts and future layout plan for 2 Seam Mine

3.2.2 THE MINERAL RESOURCE

2 Seam Mine has mined four opencast pits (i.e., OC1, OC02, OC02A and OC3) in recent years and is currently mining the fifth opencast pit (OC4), using conventional opencast strip-mining techniques (i.e., drilling, blasting, loading and hauling). Mining of an additional four opencast pits (OC4A, OC4B, OC5 and OC6) is proposed. Based on background information provided by the client, the proposed mining and infrastructure are summarized below:

- The remaining opencast pits to be mined, in sequence, are OC4A, OC4B, OC5 and OC6.
- Mining will be conducted in a phased approach, i.e., mining will start and cease in each opencast prior to the commencement of mining in the next opencast.
- ROM and clean coal will be stockpiled in approved demarcated areas before being transported off-site.
- Stripped topsoil and subsoil will be stockpiled in demarcated areas.
- Haul roads will be constructed and used during the operational phase of the mining for transporting coal materials to a processing facility. In addition, internal service roads will be constructed on an as needs basis.

Table 7 summarises the key aspects of the various pit designs, and proposed schedules for mining activities of opencast pits. Where multiple seams are targeted, the seams will be mined simultaneously.

Table 7: Key aspects of the various pit designs and proposed mining schedules

Opencast (O/C)	Target seam(s)	Pit Design					
		Pit Floor Elevation	Pit Floor Depth	Surface Area	Duration		
		(mamsl)	(mbgl)	(m^2)	Start	End	Total (months)
1	No.4 and 2 seams	1506 - 1511	23 - 36	75 300	Mining Completed (Dec-2018 to August-2019)		
2	No.4 and 2 seams	1508- 1515	35 - 43	42 100	Jan-20	Oct-20	10
2A	No.4 and 2 seams	1503 - 1507	41 - 47	17 300	Oct-20	Mar-21	6
3	No.4, 2 and 1 seams	1515 - 1518	16 - 22	61 700	Mining Completed (Jun-2018 to Nov-2018)		
4	No. 4 and 2 seams	1502 - 1503	28 - 33	85 500	Jun-21	Feb-23	9
4A	No. 4 and 1 seams			329 454	Jan-23	Feb24	11
4B	No. 4 and 1 sea			1 481 654	Mar-23	Feb24	11
5	No. 4 seam	1530 - 1535	11 - 38	222 500	Jan-23	Jun-24	16
*6	No. 4 Seam	1532 - 1542	16 - 36	697 100	Jan-22	Dec-23	24

* OC6 -currently commercial unviable

Block Name	Block Area	Overburden Thick	Overburden Volume	Coal Area	Coal Vloume	IN-situ Tonnes	Geol Loss	Mineable Tonnes	Seam Name	Seam Thickness	Raw Qualities (air dried) RawRD	CV	Ash	Moist	Vols	FC	Sulph
OC4	83 841	19.18	1 608 010	83 841	234 145	401 702	15%	341 447	S2R	2.79	1.72	17.79	37.91	2.44	19.59	40.07	0.60
	83 841	0.00	1	83 841	292 626	424 969		361 224	S2S	3.49	1.45	27.13	15.89	2.55	27.17	54.40	0.70
	83 841	0.40	33 398	83 041	66 508	103 556		88 023	S2F	0.80	1.56	23.94	24.54	2.26	23.67	49.54	1.01
	83 841	0.39	33 024	83 841	356 615	564 590		479 902	S1	4.25	1.58	22.84	27.52	2.25	22.55	47.69	0.51
	335 364	**4.99**	**1 674 433**	**334 564**	**949 894**	**1 494 817**		**1 270 594**		**2.84**	**1.57**	**22.78**	**26.80**	**2.39**	**23.15**	**47.68**	**0.62**
OC4A	82 989	19.69	1 634 010	82 989	257 656	433 682	15%	368 630	S2R	3.10	1.68	19.12	35.40	2.32	20.01	42.27	0.74
	82 989	0.21	9 774	80 487	231 600	349 192		296 813	S2S	2.88	1.51	25.30	20.49	2.55	26.10	50.85	1.00
	82 989	0.66	28 550	82 989	108 947	175 058		148 799	S2F	1.31	1.61	22.60	29.20	2.04	25.07	43.67	1.45
	82 989	0.56	21 710	82 989	311 452	492 768		418 853	S1	3.75	1.58	23.11	26.99	2.08	22.89	48.04	0.60
	331 956	**5.28**	**1 694 044**	**329 454**	**909 655**	**1 450 700**		**1 233 095**		**2.76**	**1.59**	**22.38**	**28.21**	**2.26**	**23.06**	**46.46**	**0.84**
OC4B	376 947	26.29	9 908 398	376 947	1 006 078	1 738 226	15%	1 477 492	S2R	2.67	1.73	17.53	39.24	2.13	19.02	39.61	0.54
	376 947	0.03	10 155	376 947	1 357 076	2 020 500	75%	505 125	S2S	3.60	1.49	25.73	19.02	2.55	27.12	51.28	1.08
	376 947	0.05	16 511	350 813	339 384	546 373		136 593	S2F	0.97	1.60	21.71	29.16	2.22	23.49	44.46	1.21
	376 947	2.12	797 803	376 947	1 297 689	2 074 391	15%	1 763 232	S1	3.44	1.60	22.64	28.18	1.97	23.09	46.77	0.75
	1 507 788	**7.12**	**10 732 867**	**1 481 654**	**4 000 227**	**6 379 490**		**3 882 443**		**2.70**	**1.59**	**21.07**	**31.23**	**2.11**	**22.08**	**44.55**	**0.73**
OC5	87 245	26.95	2 348 499	41 201	30 120	48 217	15%	40 984	S4U	0.73	1.60	22.25	28.77	2.22	22.94	46.08	1.96
	148 263	3.49	516 794	133 338	251 760	414 528		352 349	S4L	1.89	1.65	20.52	32.75	2.30	20.60	44.36	1.66
	148 263	54.96	8 148 652	148 263	274 478	478 720		406 912	S2R	1.85	1.75	17.03	41.64	2.09	19.14	37.13	0.43
	148 263	0.00	269	148 263	517 333	764 177	75%	191 044	S2S	3.49	1.47	26.32	18.02	2.67	27.53	51.86	1.25
	61 018	0.09	3 817	60 893	61 979	99 252		24 813	S2F	1.02	1.63	21.30	30.75	2.17	22.43	44.79	0.77
	148 263	3.93	577 806	148 263	628 982	1 006 531	15%	855 551	S1	4.24	1.60	22.43	28.26	2.08	22.81	46.85	0.64
	741 315	**15.66**	**11 595 837**	**680 221**	**1 764 652**	**2 811 425**		**1 871 654**		**2.59**	**1.59**	**22.24**	**28.51**	**2.28**	**23.13**	**46.11**	**0.95**
OC6	676 138	19.50	13 183 852	581 193	480 709	770 186	15%	654 658	S4U	0.83	1.60	22.24	28.65	2.44	23.35	45.57	2.00
	697 089	2.93	2 042 455	690 194	1 405 116	2 344 013		1 992 411	S4L	2.04	1.67	19.96	34.15	2.50	21.69	42.05	1.20
	587 708	26.17	15 381 748	535 062	1 212 469	2 067 593		1 757 454	S2R	2.27	1.71	18.46	37.30	1.95	20.26	40.50	0.94
	547 722	0.64	218 985	492 459	1 993 832	2 924 817	75%	731 204	S2S	4.05	1.47	26.74	17.23	2.75	29.23	50.80	1.61
	504 402	0.36	120 220	373 427	593 410	959 068		239 767	S2F	1.59	1.62	21.73	29.72	2.29	22.21	45.78	0.95
	692 082	2.63	1 823 694	665 789	2 084 851	3 362 282	15%	2 857 940	S1	3.13	1.61	21.83	29.35	2.52	23.97	44.16	1.31
	3 705 141	**8.90**	**32 770 954**	**3 338 124**	**7 770 387**	**12 427 959**		**8 233 434**		**2.33**	**1.60**	**21.12**	**31.09**	**2.40**	**22.99**	**43.62**	**1.27**
OC6A	113 520	28.99	3 291 121	113 520	284 029	469 161	15%	398 787	S2R	2.50	1.65	20.82	32.61	1.90	21.41	44.08	0.48
	113 520	0.02	1 774	113 520	454 399	672 481	75%	168 120	S2S	4.00	1.48	25.98	18.23	3.02	32.55	46.17	1.01
	113 520	0.24	257	112 796	79 051	121 599		30 400	S2F	0.70	1.56	23.42	25.48	2.60	23.29	48.55	1.13
	113 520	5.88	667 439	113 520	375 440	612 736	15%	520 826	S1	3.31	1.63	21.45	30.95	2.02	23.19	43.84	0.90
	454 080	**8.78**	**3 960 591**	**453 356**	**1 192 919**	**1 875 977**		**1 118 132**		**2.63**	**1.57**	**21.96**	**29.48**	**2.14**	**23.97**	**44.40**	**0.77**
					Total Resources (In-situ)	**26 440 368**		**17 609 353**									
					Depletion (mined at OC4 Pit)	**469 740**		**415 304**			**as at March 2022**						
					Total Remaining Resources	**25 970 628**		**17 194 049**									

Figure 4: Total coal Resources remaining at 2 Seam Mine

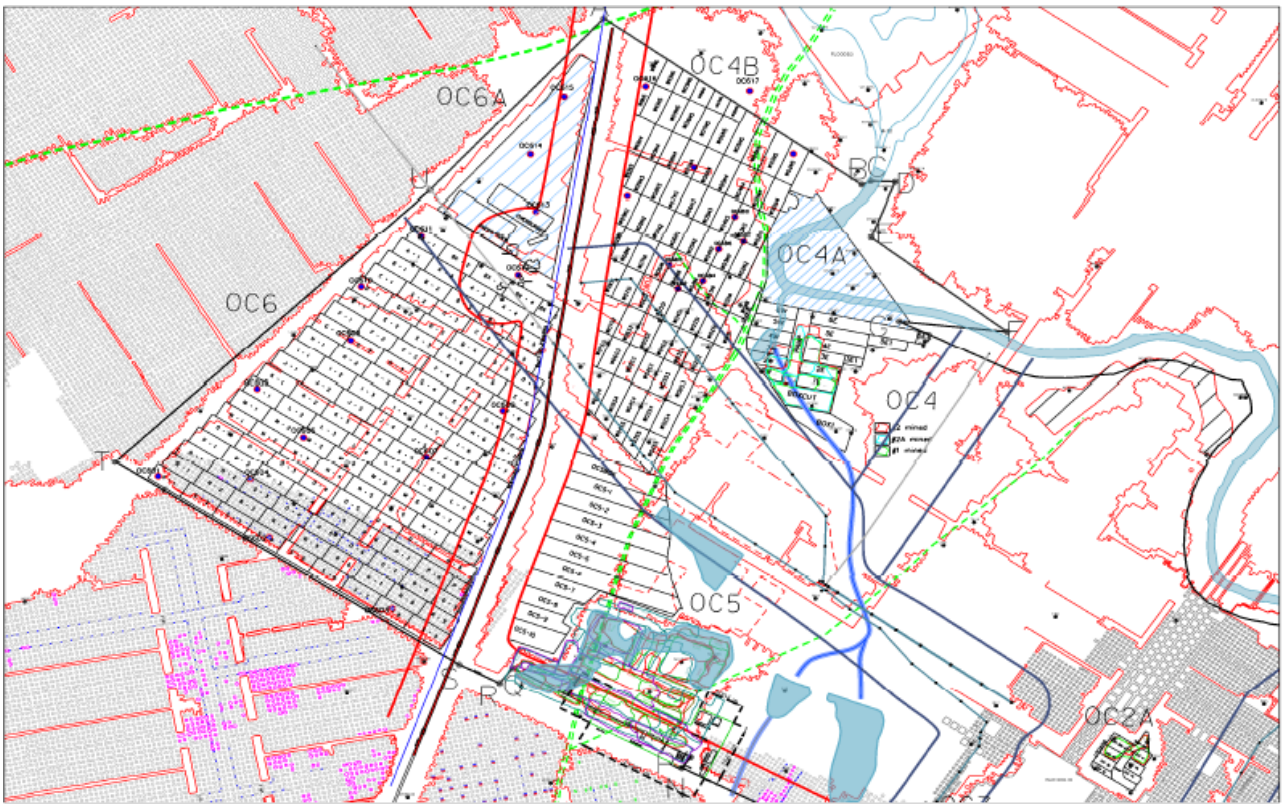

Figure 5: Location of coal reserves (approved and proposed)

3.2.2.1 MINING METHOD

3.2.2.1.1 SOIL REMOVAL AND STORAGE

Topsoil's will be excavated using a hydraulic excavator and three articulated dump trucks to topsoil stockpile sites selected along the peripheral portions of the property, this will form a barrier to the public that will be signposted and it will form a visual barrier to passing traffic.

The topsoil will be excavated to a maximum depth of 1.0m over the entire area of occurrence. The topsoil will be stacked in a user-friendly manner in a solid berm approximately 3,0m in height. Excess topsoil will be placed on the topsoil stockpile berms on the solid areas until the area is ready for concurrent rehabilitation. As one strip is top soiled, the topsoil will be hauled to a finally rehabilitated strip and the topsoil will be placed on this strip to be fertilised and seeded with an acceptable mixture of legumes and grass seeds for the growing season.

3.2.2.1.2 SOFTS REMOVAL AND STORAGE

The softs will be excavated using a hydraulic excavator and three articulated dumpers to rejection of the breakout force of the softs excavator bucket. This excavation will average 5.0m depth over the immediate strip area.

The softs will be placed onto previous rehabilitation to generate barriers to contain water that will be pumped out of the underground workings and will be used for storage for later use, inside the topsoil berms to enhance the visual and physical barrier created by the topsoil berms. This barrier will be approximately 4.0m high.

Excess softs will be stacked on the indicated softs dumps to the south of each of the mini pits and to the South of the pit on the partially rehabilitated old opencast. Softs will be placed in future strips concurrently to close out on the rehabilitation planned. In some shallow instances, the coal will be exposed by the soft's removal process. Sufficient room exists on current softs stockpiles to accommodate any excess softs that do not fit into the voids.

3.2.2.1.3 BOX CUT HARDS REMOVAL AND PLACEMENT.

The box cut hards that will be excavated using four shovel and truck fleets to the floor of the 2 Lower coal seam and 1 seam where present. This box cut will be excavated 50.0 metres wide to enable a 45.0 metre rollover to take place. The original ramp and three new sub ramps will be excavated to enable the various layers to be extracted.

The hards of the box cut will be placed on the no coal zone where final voids are planned for final void filling at the end of the mining planned in the area. Extra hards will be placed alongside planned hards dumping areas that will be bulldozed closed in the future.

While the box cut is being excavated, the first strip topsoil and then softs will be excavated, hauled and placed on the topsoil stockpile. The hards of strip one will be drilled and blasted and then dozed over into the box cut to commence the roll over where available.

3.2.2.1.4 COAL MINING

The opencast mining areas are mined using the truck and shovel, roll-over mining method. Refer to Figure 6 for a schematic presentation of the opencast mining process. Coal will be broken out using a large excavator where

economically possible, when it is not economical, then the coal will be drilled and blasted to create easy digging conditions. A box-cut is developed and the overburden and topsoil are stockpiled.

The coal will be transported to coal stockpiles and will be loaded from the coal stockpiles into road haulers for transport to the designated beneficiation facility. Provision has been made on the surface to utilize the beneficiation plant and the crushing and screening plants.

The floor of the excavation and the high wall of the excavation will be cleaned off by bulldozer and grader blading to remove loose coal on the high wall and floor area and to clean these areas of loose coal. Once all the coal has been mined out, the final rehabilitation will commence. The opencast area will be backfilled with overburden material and levelled concurrently with mining. Once backfilled to the correct level, topsoil is replaced and the area re-vegetated. Refer to Figure 7 for a schematic presentation of the rehabilitation process.

Coal stockpiles ROM will be placed on backfilled ground for sampling and upliftment. It is not envisaged to store more than 100 000 tons at any one time. Coals from different coal seams will be stored separately to enable sampling and blending to Eskom and Export contractual specifications prior to upliftment.

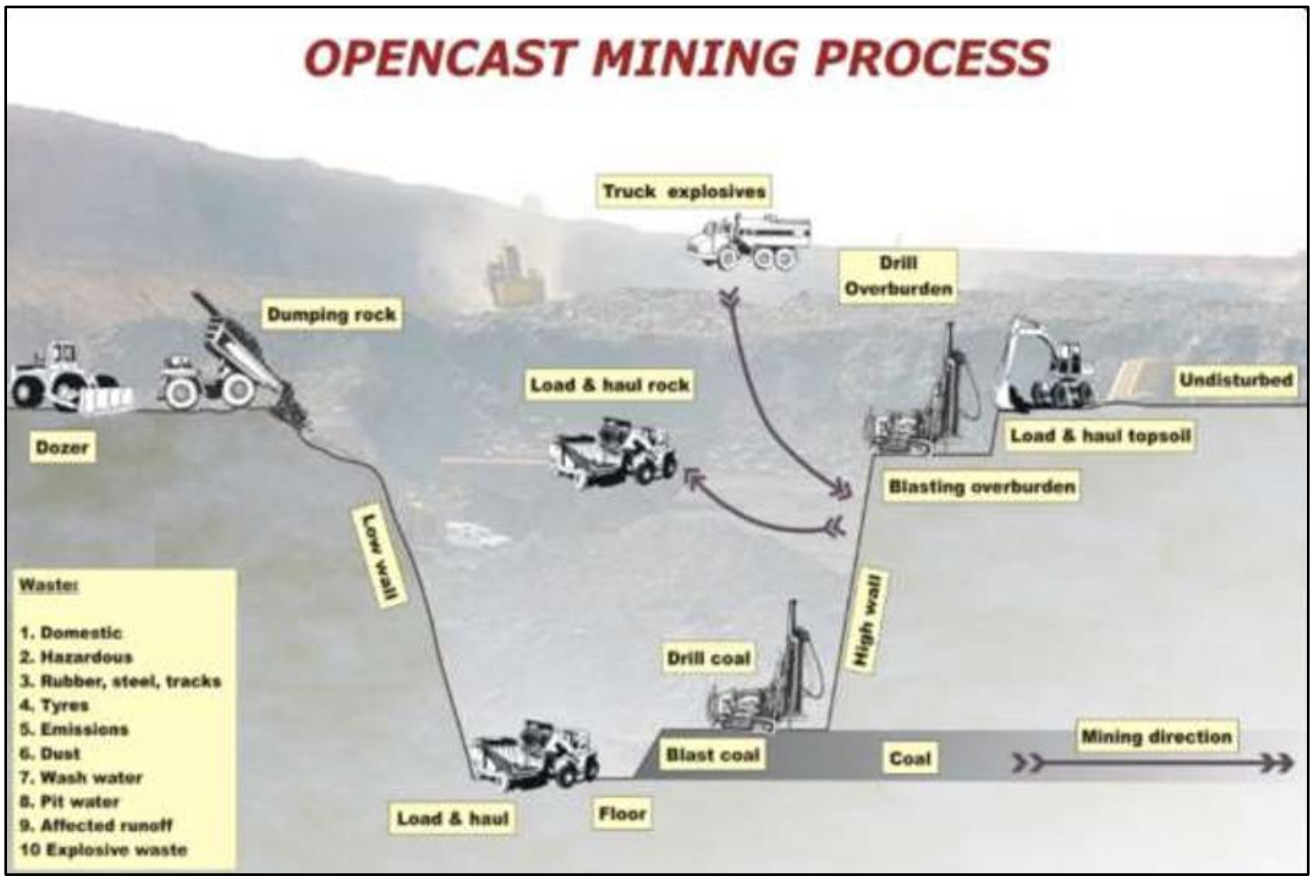

Figure 6: Typical Bord and Pillar Layout

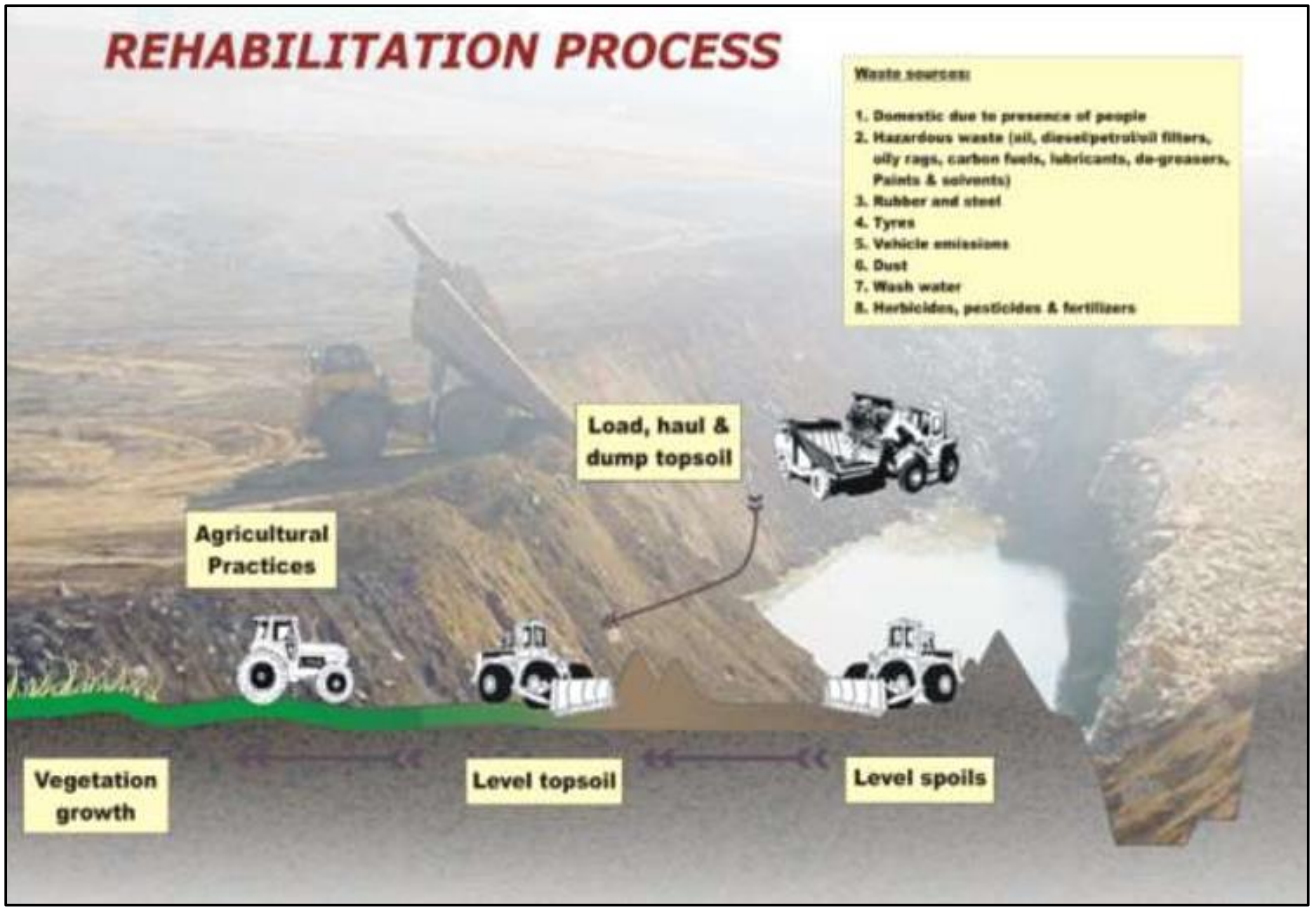

Figure 7: Typical Rehabilitation Process (Wells et al., 1992)

3.3 DESCRIPTION OF MINERAL PROCESSING OPERATIONS

3.3.1 PRODUCT AND MARKETS

A B-Grade quality coal is obtained from the 2 Seam Mine. The B-grade coal is screened and sized as a duff, peas and nuts products and sold to Chandler Coal on contract. This product is currently produced and supplied to the inland and domestic markets. Three different sized products are currently being produced: peas, nuts and duff and equates to approximately 61.8% of the total coal mined.

Once the proposed beneficiation facility is complete then the sales will be of washed and crushed coal. Once the proposed washing plant has been constructed, the coal will be crushed to < 50mm and will be beneficiated to the various grades for export and inland requirements:

- Export: 60% 6 000KCAL (RB 1), 5 500KCAL (RB 2) and 4 800KCAL (RB 3)
- Inland: 10% Peas
- Eskom/ Sasol: 30% 21,5MJ/KG and 20,0 MJ/KG

2 Seam has already submitted quality and quantity contractual documentation to both Arnot and to Sasol to obtain offtakes.

3.3.1.1. MARKET FOR EACH SPECIFIC PRODUCT IN TERMS OF LOCAL, REGIONAL OR INTERNATIONAL

Local: Peas to Sappi, Mondi, steam generating boiler users and hospitals,
Total market 160 000 tons per month
(2 Seam potential market 20 000 tons per month)

Regional: ESKOM Power Stations and Sasol,
Total market 16 500 000 tons per month
(2 Seam market 50 000 tons per month)

Export: Europe, North Africa, China, Japan and India.
Total market 6 500 000 tons per month
(2 Seam market potential 50 000 tons per month)

3.4 CURRENT MINE INFRASTRUCTURE

The operation currently includes the following: -

- Opencast pits;
- Access and haul roads;
- Security access;
- Bulk hydrocarbon storage facilities;
- Overburden stockpiles;
- Topsoil stockpiles;
- ROM stockpiles and crusher area at Block 3;
- Dirty water management berm around the overburden stockpiles;
- Management of dirty water in the pit – pumped to the Block 3 PCD;
- A 200 mm outside diameter pipe that connects the pit with the PCD; and

- Storm water drainage.

The existing and proposed mine layouts are presented in Figure *3*.

3.4.1 WASTE CLASSIFICATION

General waste (as per the National Environmental Management: Waste Amendment Act, 2014 (Act No. 26 of 2014) (NEMWAA)) means waste that does not pose an immediate hazard or threat to health or environment, and includes (a) domestic waste; (b) building and demolition waste; (c) business waste; (d) inert waste and (e) any waste classified as non-hazardous waste in terms of the regulations made under Section 69, and includes non-hazardous substances, materials or objects within business, domestic, inert, building and demolition wastes.

Domestic waste is mostly generated at the mine offices and change houses, while industrial waste is generated during mining activities (although the majority of industrial waste is classed as hazardous). The domestic and non-hazardous industrial waste stream comprises of typical constituents as paper, empty cans, glass, non-contaminated containers (steel and plastic), scrap metal, non-contaminated builder's rubble, piping and tubing (plastic, metal and rubber) and wood cut-offs. These wastes are separated at source and then transferred to a central temporary holding facility comprising of skips.

3.4.2 HAZARDOUS WASTE

Hazardous waste, as defined under NEM:WA means waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment and includes hazardous substances, materials or objects within business waste[3], residue deposits[5] and residue stockpiles.

Hazardous business waste that could occur on site is:

- Waste from the manufacture, formulation, supply and use (MFSU) of coatings (paints, varnishes and vitreous enamels), adhesives, sealants and printing inks:
    - Wastes from MFSU and removal of paint and varnish;
    - Wastes from MFSU of other coatings (including ceramic materials);
    - Wastes from MFSU of printing inks; and
    - Wastes from MFSU of adhesives and sealants (including waterproofing products).
- Oil wastes and waste of liquid fuels (except edible oils) and includes:
    - Waste hydraulic oils;
    - Waste engine, gear and lubricating oils;
    - Waste insulating and heat transmission oils;
    - Oil/water separator contents;
    - Wastes of liquid fuels; and

- Hazardous portions of other wastes.

- Waste organic solvents, refrigerants and propellants:
  - Waste organic solvents, refrigerants and foam/aerosol propellants.
- Other waste not specified in the list:
  - Hazardous portion of wastes from end-of-life vehicles from different means of transport (including off-road machinery) and wastes from dismantling of end-of-life vehicles and vehicle maintenance;
  - Hazardous portions of wastes from electrical and electronic equipment;
  - Hazardous portion of wastes from off-specification batches and unused products;
  - Wastes from discarded gases in pressure containers and discarded chemicals;
  - Wastes from discarded batteries and accumulators;
  - Wastes from transport tank, storage tank and barrel cleaning;
  - Spend catalyst wastes;
  - Oxidising substances wastes;
  - Aqueous liquid wastes destined for off-site treatment; and
  - Waste lining and refractories;
- Construction waste:
  - Wastes from bituminous mixtures, coal tar and tarred products;
  - Discarded metals (including their alloys);
  - Waste soil (including excavated soil from contaminated sites), stones and dredging spoil;
  - Wastes from insulating materials and asbestos-containing construction materials;
  - Wastes from gypsum-based construction material; and
  - Wastes from other construction and demolition;
- Wastes from human or animal health care and/or related research (except kitchen and restaurant wastes not arising from immediate health care):
  - Wastes from natal care, diagnosis, treatment or prevention of disease in humans.
- Wastes from waste management facilities:
  - Hazardous portion of wastes from incineration or pyrolysis of waste;
  - Hazardous portions of waste from physic/chemical treatment of waste;
  - Hazardous portion of stabilised/solidified wastes;
  - Hazardous portion of wastes from aerobic treatment of solid wastes;
  - Hazardous portion of wastes from anaerobic treatment of waste;
  - Wastes from shredding of metal-containing wastes;

  - Wastes from oil regeneration; and
  - Wastes from soil remediation.

- Residue deposits: that will occur on site are:
  - Tailings facility; and
  - Waste rock dumps.

3.4.3 POTABLE WATER SUPPLY

Potable water is sourced from the boreholes. Potable water is required for ablution and showers in the change house.

3.4.4 SEWAGE

There are existing ablution facilities at the 2 Seam Mine. Domestic sewage is treated at an existing package sewage treatment plant and the purified effluent is disposed of at the PCD and not discharged to the natural environment.

3.4.5 MINE ACCESS ROAD

Access to the mine is from the R544.

3.4.6 SECURITY AND ACCESS CONTROL

The mine implements security and access control.

3.5 PROPOSED INFRASTRUCTURE

The proposed processing plant is a heavy media cyclone plant, the ROM coal is brought to the primary section and fed through a primary crusher; a recirculating load secondary crusher reduces the coal to -50.0mm.

The coal is then fed via conveyors into a mixing tank where magnetite and water are mixed with the coal and are fed into the cyclone that spins out the rock and the clean coal. The clean coal goes to screens to create different products and the rock goes to discard for rewash or stacking.

Fine coal is screened out to go to the filter press or to the spiral section. The < 3.0mm coal is fed into a spiral circuit with water where the effect of centrifugal forces and gravity separate the coal from rock. Refer to Figure 8 for the proposed layout of the coal wash plant.

A series of water only Jig plants may be used instead of the DMS type plant. A double stage wash can be used if extra jigs are put in series. The discard from the water jigs is placed in the pit below the shale horizon.

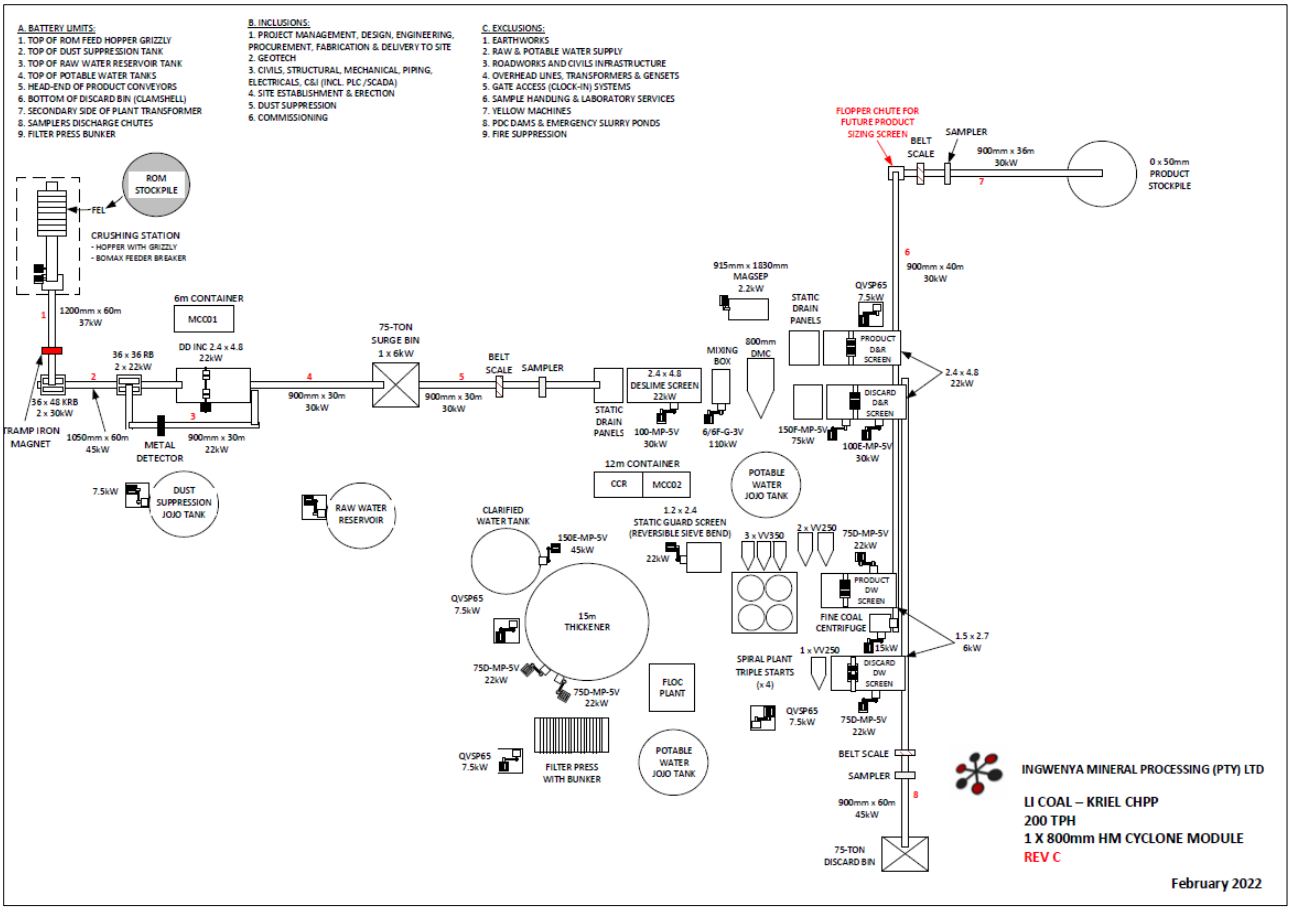

Figure 8: Proposed Coal Wash Plant Layout

A tailings facility is also proposed to be established on a previously mined area. The size of the area for the tailing's facility will be approximately 40 ha. Further information for the tailing's facility will be included in the EIAR.

2 Seam also proposed to establish a contractor's yard on site. The area proposed is about 3.5 ha in size.

Stormwater Management infrastructure will need to be established on site, including stormwater management berms, and two PCD's, one for the proposed tailings facility and the other for the proposed coal wash plant. Further information will be included in the EIAR.

A diversion of the Olifants River is proposed in order to access additional coal resource. An original river diversion was proposed in 1986 to the DWS and it is understood that the DWS approved the diversion. The river diversion was dug in 1987, but never utilised and can be seen on the photograph below (Figure 9).

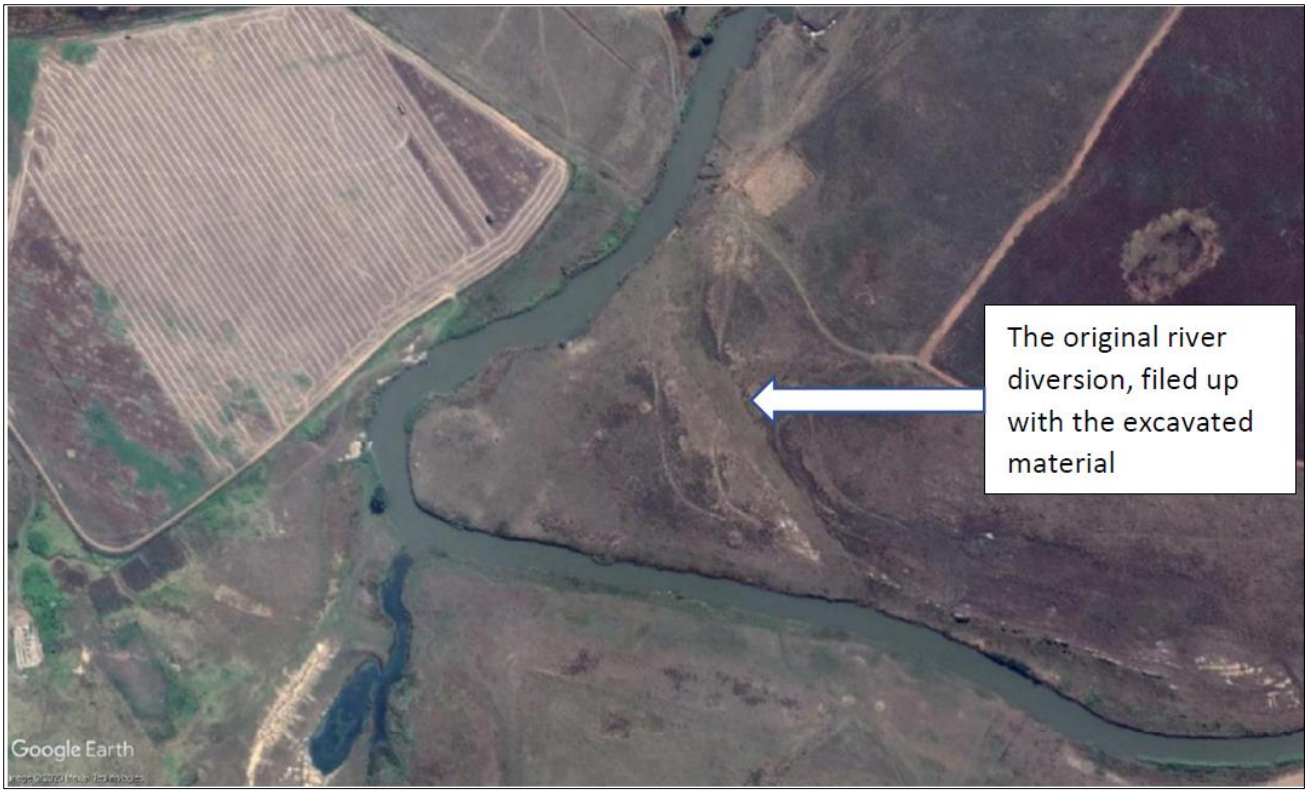

Figure 9:Original dug river diversion site

This diversion can easily be dug open again and the original plan put into use with the clean sandstone material being utilise to form the flood barriers that will prevent the Olifants River from topping the berm Gabion baskets will be used to prevent the river from eroding the berm and a backup weir will be installed to control the upriver flow rate. Further information including proposed layout plans will be included in the EIAR.

3.5 EXISTING AND PROPOSED ACTIVITIES

The main mining actions, activities and process that are planned to take place on site are listed in Table 9. All actions, activities and processes have been grouped into each of the relevant project phases namely: pre-construction, construction, operation, decommissioning, rehabilitation and closure. For this report, the following broad definitions apply:

- Pre-construction refers to the phase in which planning takes place;
- Construction refers to the phase in which the site is prepared, and infrastructure is established;
- Operation refers to the phase in which physical mining and production takes place;
- Decommissioning refers to the phase in which infrastructure is removed and rehabilitation efforts are applied, and their success monitored; and
- Closure refers to the phase in which maintenance and rehabilitation monitoring are undertaken to ensure that the mine's closure objectives are met.

Table 8: List of main action, activities or processes on site and per phase

Main Activity/Action/Process	Ancillary Activity	Pre-Construction	Construction	Operation	Decommissioning	Closure
Site preparation	Vegetation clearance for the establishment of infrastructure and opencast pits		As required	As required	As required	
	Planned placement of infrastructure		At start of phase	As required		
Human resource management	Employment/recruitment		At start of phase	As required	As required	As required
	I&AP consultations		At start of phase	On-going	On-going	On-going
	CSI initiatives		At start of phase	On-going	On-going	On-going
	Skills development programmes	At start of phase	On-going	On-going	On-going	On-going
	Environmental awareness training		At start of phase	On-going	On-going	As required
	HIV/AIDS Awareness programmes		At start of phase	On-going	On-going	
	Integration with Municipalities' strategic long-term planning	At start of phase	On-going	On-going	On-going	
Earthworks	Stripping and stockpiling of soils (Ventilation shaft)		At start of phase	As required	As required	
	Cleaning, grubbing and bulldozing (Ventilation shaft)		At start of phase	As required	As required	
	Removal of cleared vegetation		At start of phase	As required		
	Digging trenches and foundations		At start of phase	As required	As required	
	Civil Blasting		As required	As required	As required	
	Maintenance of storm water management measures		At start of phase	As required	As required	
	Maintenance of firebreak		At start of phase	As required	As required	

Main Activity/Action/Process	Ancillary Activity	Pre-Construction	Construction	Operation	Decommissioning	Closure
Civil Works	Maintenance of infrastructure and services		At start of phase	As required		
	Mixing of concrete and concrete works		As required	As required		
	PCD		At start of phase	As required	On-going	
	Establishment of dewatering pipelines		At start of phase	As required		
	Sewage and sanitation		At start of phase	On-going	On-going	
	Fuel storage area		Ongoing			
	Chemical storage area		Ongoing			
	General waste area		Ongoing	On-going		
	Access control and security		Ongoing	As required	As required	
	General site management		On-going	On-going	On-going	On-going
Opencast Mining	Drilling		As required	As required		
	Blasting		As required	As required		
	Excavations		As required	As required		
	Removal of overburden by dozing and load haul			As required		
	Establishment of internal haul roads			As required	As required	
	Removal of ore			On-going		
	Use of RoM stockpiles		Ongoing	As required	As required	
	Use of Product Stockpiles			On-going	On-going	
	De-watering of opencast workings			On-going	On-going	
	Pumping of water to PCD			On-going	On-going	
	Waste rock dumps for backfilling			On-going	On-going	
	Soil management		On-going	On-going	On-going	On-going
	Water management		On-going	On-going	On-going	On-going
	Concurrent rehabilitation			On-going	On-going	On-going

Main Activity/Action/Process	Ancillary Activity	Pre-Construction	Construction	Operation	Decommissioning	Closure
	Water treatment			On-going	On-going	On-going
Infrastructure removal	Dismantling and demolition of infrastructure				As required	
	Blasting				As required	
	Safety control				On-going	On-going
Rehabilitation	Backfilling of pits			On-going	On-going	
	Slope stabilisation			On-going	On-going	On-going
	Erosion control			On-going	On-going	On-going
	Landscaping			On-going	On-going	On-going
	Replacing topsoil			On-going	On-going	On-going
	Removal of alien/invasive vegetation			On-going	On-going	On-going
	Re-vegetation			On-going	On-going	On-going
	Restoration of natural drainage patterns				On-going	On-going
	Remediation of ground and surface water			On-going	On-going	On-going
	Rehabilitation of external roads				On-going	On-going
Maintenance	Initiate maintenance and aftercare program				At end of phase	On-going
	Environmental aspect monitoring			On-going	On-going	On-going
	Monitoring of rehabilitation					On-going

4. POLICY AND LEGISLATIVE CONTEXT

This section provides an overview of the governing legislation identified which may relate to the proposed project. A summary of the applicable legislation is provided in Table 9 below. The primary legal requirement for this project stems from the need for an EA to include additional activities within the existing mining right for the 2 Seam mine for which an application needs to be submitted to the competent authority, which is the DMRE, in accordance with the requirements of both the NEMA and MPRDA. In addition, there are numerous other pieces of legislation governed by many acts, regulations, standards, guidelines and treaties on an international, national, provincial and local level, which should be considered to assess the potential applicability of these for the proposed activity.

Table 9: Policy and Legislative Context

Applicable Legislation and Guidelines Used to Compile the Report	Reference Where Applied
Constitution of South Africa, 1996 (Act No. 108 of 1996) [as amended] • *Section 24* *Environment: Everyone has the right-* *(a) to an environment that is not harmful to their health or well-being; and* *(b) to have the environment protected, for the benefit of present and future generations through reasonable legislative and other measures that-* *i) prevent pollution and ecological degradation;* *ii) promote conservation; and* *Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.*	The proposed project has the potential to harm the environment and poses a risk to the health and wellbeing of people. The development however, also has the potential to secure sustainable development through reusing process products and thereby limiting the use of natural resources. The Applicant has the overall responsibility to ensure that the rights of people in terms of Section 24 of the Constitution is protected in terms of the proposed development activity.
National Environmental Management Act (No. 107 of 1998) [as amended] • *Section 28 (1)* *Duty of Care and responsibilities to minimise and remediate environmental degradation.*	The Applicant is the developer and overall responsibility of the mine rests with him, especially in terms of liabilities associated with the operational phase.
EIA Regulations, 2014 (Government Notices 982 -984) [as amended] *The proposed construction, operational and closure activities of the proposed development triggers listed activities that are listed in the EIA regulations for which a Scoping and Environmental Impact Assessment (EIA) process have to be conducted:* Listing Notice 1, 2 & 3 have been triggered as well as GN633 for several waste activities requiring a Waste License as well.	The proposed project requires an application for a mining right. An integrated NEMA and NEM:WA application has been launched with the DMRE (This application).
EIA Regulations, 2014 (Government Notices 982 -984) *Chapter 6: Regulation 39 to 44: Public Participation;*	The EIA Regulations, 2014 [as amended] prescribes inter alia:

Applicable Legislation and Guidelines Used to Compile the Report	Reference Where Applied
Chapter 4: Application for Environmental Authorisation: *Part 3 Scoping and Environmental Impact Report (S&EIR)* *Appendix 2: Scoping Report* *Appendix 3: Environmental Impact Assessment Report* *Appendix 4: Environmental Management Programme* *Appendix 5: Closure Plan* *Appendix 6: Specialist Reports*	the manner in which public participation needs to be conducted as well as the requirements of a scoping and environmental impact assessment process and the content of a scoping report, environmental impact assessment report and environmental management programme. The content of specialist reports, closure plans and environmental audit reports are also provided.
Mineral and Petroleum Resources Development Act, 2002 (Act. 28 of 2002) [as amended]:	A Section 102 amendment will be submitted to the DMRE.
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) [as amended] • *Section 16* *General duty in respect of waste management;* • *Section 17;* *Reduction, re-use, recycling and recovery of waste;* • *Section 18; and* *Extended producer responsibility; and* • *Section 21* *General requirements for storage of hazardous and general waste.*	The proposed mining area will produce general and hazardous waste which need to be managed and disposed of according to best practices such as recycling, safe storage, etc. An integrated NEMA and NEM:WA application has been launched with the DMRE (this application).
National Water Act, 1998 (Act No. 36 of 1998) [as amended] • *Section 3* *Regulation of flow and control of all water* • *Section 19* *Prevention of pollution to watercourses* • *Section 21* *The water use activities associated with the proposed development requires compliance with the requirements of the NWA as listed under GN No. 19182. An application for an integrated water use license is lodged in terms of Section 21 of the National Water Act, 1998 (Act 36 of 1998) [as amended] to undertake the following activity:* *Section 21: (a) Taking water from a water resource;* *Section 21: (c) Impeding or diverting the flow of water in a watercourse;* *Section 21: (g) disposing of waste in a manner which may detrimentally impact on a water resource;* *Section 21(i): Altering the bed, banks course or characteristics of the watercourse; and*	The proposed mine will have to apply for a Water Use License for the following Section 21 water uses: - Section 21(a): Abstraction of water for use at the washplant and on site for dust suppression - Section 21 (c): Impeding or diverting the flow of water in a watercourse - Section 21(g): Disposing of water in a manner which may detrimentally impact on a water resource - Section 21(i): Altering the bed, banks course or characteristics of the watercourse; and - Section 21(j): Removing, discharging or disposing of water found within the opencast pits Water management on the mine will be in line with the requirements of the site specific WUL and GN R704 National Water Act, 1998 (Act No. 36 of 1998).

Applicable Legislation and Guidelines Used to Compile the Report	Reference Where Applied
Section 21(j); Removing, discharge or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people	
Regulations Regarding the Procedural Requirements for Water Use Licence Applications and Appeals published in terms of NWA in Government Notice 267 of March 2017 Several General Authorisations have been published in terms of Section 39 of the NWA (various dates)	The Regulations will be taken into consideration during the Water Use Licence Application process. The hydrological assessment will al take the regulation into account.
Mine Health and Safety Act, 1996 (Act No. 29 of 1996) [as amended] and associated regulations • *Chapter 2, Sections 2 – 4* *Responsibilities of owner* • *Chapter 2, Sections 5 – 13* *Responsibilities of manager;* • *Chapter 2, Sections 14 – 18;* *Documentation requirements;* • *Chapter 2, Section 19 – 20 and 22 to 24* *Employee's rights and duties; and* • *Chapter 2, Section 21* *Manufacturer's and supplier's duty for health and safety*.	The proposed project activities may create an environment that is not safe and healthy for workers on and visitors to the site (if not managed correctly). The act provides for measures to prevent threats to the health and safety of humans in the development area.
National Heritage Resources Act, 1999 (Act No. 25 of 1999) • *Section 44 (1);* *Preservation and protection of heritage resources;* • *Section 3 Types and ranges of heritage resources (i) (i);* *Objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens*.	Protection of indigenous heritage resources on the property.
National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) [as amended] • *Section 32* *Control of dust* • *Section 34* *Control of noise*	Impacts on surrounding landowners need to be managed through dust and noise mitigation measures.
List of Activities which Result in Atmospheric Emissions, published in terms of NEM:AQA in Government Notice 893 of 2013 (as amended)	The proposed mining activities will not trigger any of the activities.

Applicable Legislation and Guidelines Used to Compile the Report	Reference Where Applied
National Dust Control Regulations, 2013 (Government Notice 827 of 2013) • *Section 3* *Dust fall standard* • *Section 4* *Dust fall monitoring program* • *Section 6* *Measures for control of dust* • *Section 7* *Ambient air quality monitoring (PM10)* • *Section 8* *Offences* • *Section 9* *Penalties*	Dust fallout needs to be monitored in accordance to the standards set out in the monitoring programme with the specified measures due to the Applicant being liable to offences and penalties associated with non-conformance to dust which may influence employees and surrounding landowners.
National Greenhouse Gas Emission Reporting Regulations, published in terms of NEM:AQA in Government Notice of July 2017	During operational phase the mine will be required to report in the prescribed format.
Veld and Forest Fire Act, 1998 (Act No. 101 of 1998) [as amended] • *Section 12 (1)* *Duty of the landowner to prevent fire from spreading to neighbouring properties.*	Cautionary steps in avoiding the spread of fires to and from neighbouring properties.
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) [as amended] • *Section 9* *Norms and standards* • *Section 27* *Delegation of power and duties* • *Section 30* *Financial accountability* • *Section 43* *Biodiversity management plans.*	Indigenous vegetation needs to be protected and managed in accordance with management measures set out in the management plans developed for the mine and the Applicant need to ensure he is aware of and covers his liabilities. An activity for removing and clearance of vegetation has been applied for within this application and no other vegetation clearance will be permitted other than that approved in terms of the EA when/if the Competent Authority makes its decision.
Alien and Invasive Species Regulations (Government Notice 598 of 2014) and Alien and Invasive Species List, 2014 in terms of NEMBA (Government Notice 599 of 2014), as amended • *Notice 2* *Exempted Alien Species in terms of Section 66 (1)* • *Notice 3*	It is the responsibility of the Applicant to ensure that all prohibited plant and animal species are eradicated as far as possible.

Applicable Legislation and Guidelines Used to Compile the Report	Reference Where Applied
National Lists of Invasive Species in terms of Section 70(1) – List 1, 3-9 & 11 • *Notice 4* *Prohibited Alien Species in terms of Section 67 (1) – List 1, 3-7, 9-10 & 12*	
Conservation of Agricultural Resources Act (no. 43 of 1983) • *Section 5* *Prohibition of spreading of weeds* • *Section 12* *Maintenance of soil conservation works and maintenance of certain states of affairs* • *Section 16* *Regional Conservation Committees*	Listed invader/alien plants occurring on site which requires management measures to be implemented to strive to maintain the status quo environment, especially through the guidelines provided by the Regional Conservation Committee.
Mining and Biodiversity Guideline (2013)	The Act, regulation and guideline have informed project planning and will be taken into account in the assessment and mitigation of impacts.
National Biodiversity Offset Policy, 2021	Not applicable to this project.
Hazardous Substances Act, 1973 (Act 15 of 1973) [as amended] • *Section 2* *Declaration of grouped hazardous substances;* • *Section 4* *Licensing;* • *Section 16* *Liability of employer or principle* • *Section 9 (1)* *Storage and handling of hazardous chemical substances* • *Section 18* *Offences*	The Applicant must ensure the safety of people working with hazardous chemicals (specifically fuels), as well as safe storage, use and disposal of containers during the on-site operational phase together with the associated liability should non-compliance be at the order of the day.
Hazardous Chemical Substances Regulations, 1995 (Government Notice 1179 of 1995) • *Section 4* *Duties of persons who may be exposed to hazardous chemical substances* • *Section 9A (1)* *Penalties*	Hazardous substances will be stored and utilised on the site and non-compliance to management measures will result in prosecution of the Applicant in terms of his liabilities to the socio-economic environment.
Waste Classification and Management Regulations and Norms and Standards for the assessment of for landfill disposal and for disposal of waste to landfill, 2013 (Government Notice 634 – 635 of 2013)	The mining area will produce general and hazardous waste which need to be managed and disposed of according to best practices such as recycling, safe storage, etc.

Applicable Legislation and Guidelines Used to Compile the Report	Reference Where Applied
promulgated in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) [as amended]; and Regulations regarding the planning and management of residue stockpiles and residue deposits from a prospecting, mining, exploration or production operation (GN R. 632 of 2015)	Disposal will take place at an existing approved waste disposal facility. Waste Classification will be done and a Waste License is required for the mine for the establishment of the Tailings Facility An integrated NEMA and NEM:WA application has been launched with the DMRE.
National Norms and Standards for the Storage of Waste, published in terms of NEM:WA in Government Notice 926 of 2013	The purpose of the norms and standards is to – a. Provide a uniform national approach relating to the management of waste storage facilities. b. Ensure best practice in the management of waste storage facilities; and c. Provide minimum standards for the design and operation of ne waste storage facilities. Management of the waste storage facility will be in line with the requirements.
National Norms and Standards for the Sorting, Shredding, Grinding, Crushing, Screening or Baling of General Waste, published in terms of NEM:WA in Government Notice 1093 of 2017	The purpose of these Norms and Standards is to provide a uniform national approach relating to the management of waste facilities that sort, shred, grind, crush, screen, chip or bale general waste. The waste rock dump is not regulated under these Norms and Standards. No general waste will be processed in terms of these norms and standards on the mining area.
Guideline on the Need and Desirability, Department of Environmental Affairs, 2017	This guideline has been taken into account as part of project planning. The 2017 Guideline has been used within this process.
NEMA: Government Notice. 805 Companion Guideline on the Implantation of the Environmental Impact Assessment Regulations, 2010, October 2012.	The application for Environmental Authorisation is submitted in terms of the EIA Regulations.
NEMA: GN. 807 Public Participation Guideline, October 2012.	Consultation with Interested and Affected Parties and Communities.
Public Participation guideline in terms of NEMA EIA Regulations, Department of Environmental Affairs, 2017	This guideline has informed the public participation process for the project.
Regulations Pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production Operations, 2015 (Notice 1147 of 2015), as amended • *Regulation 5: Scope of financial provision* • *Regulation 6: Method for determining financial provision* • *Regulation 12: Preparation and submission of plans and reports*	An applicant must determine the financial provision through a detailed itemisation of all activities and cost, calculated based on the actual cost of implementation of the measures required.
Regulations on use of Water for Mining and Related Activities Aimed at the Protection of Water Resources, 1999 (Notice 704 of 1999). • *Regulation 4: Restrictions on location of mining activities* • *Regulation 7: Protection of water resources* • *Regulation 12: Technical investigation and monitoring.*	Every person in control of a mine or activity must take measures to manage water in an effective manner as prescribe by the regulation.

Applicable Legislation and Guidelines Used to Compile the Report	Reference Where Applied
Noise Control Regulations (The Republic of South Africa, 1992) published in terms of Section 25 of the Environment Conservation Act (Act no. 73 of 1989)	The regulations define the following • Controlled areas; and • Disturbing noise Limits are provided for rating levels for outdoor noise. To be utilised by the Noise specialist to determine the impact and mitigation measures.
NEM:AQA: GNR 283. National Atmospheric Emissions Reporting Regulations, 2015. *For purposes of these Regulations, emission sources and data providers are classified according to groups A to D listed in Annexure 1 to these Regulations.* Section 5(3): *For purposes of these Regulations, emission sources and data providers are classified according to groups A to D listed in Annexure 1 to these Regulations.*	Any person, that holds a mining right or permit in terms of the MPRDA. Emissions report must be made in the format required for NAEIS to the relevant air quality officer.
National Guideline on minimum information requirements for preparing Environmental Impact Assessments for mining activities that require environmental authorisation, published in terms of NEMA in Government Notice 86 of 2018	This guideline has been taken into account as part of project planning.
Restitution of Land Rights Amendment Act, 2014 (Act 15 of 2014). The act deals with Land claims.	The validity of the amendment Act was challenged in the Constitutional Court. The Constitutional Court found the Amendment Act to be invalid because of the failure of Parliament to facilitate public involvement as required by the Constitution. The Amendment Act ceased to be law on 28 July 2018. The Constitutional Court ordered that the claims that were lodged between 1 July 2014 and 27 July 2016 are validly lodge, but it interdicted the Commission from processing those claims until the Commission has finalised the claims lodged by 31 December 1998 or until Parliament passes a new law providing for the re-opening of lodgement of land claims. It is important to note that the provisions of section 11(7) of the Restitution of land Rights Amendment Act, 1994 do not apply until after the Commission has accepted the claim for investigation and published its details in the Government Gazette. Where section 11(7) of Restitution of land Rights Amendment Act, 1994 applies, the land claim commission will be informed a month before any activity is undertake on the property.
Deeds Registries, 1937 (Act No. 47 of 1937) [as amended]	Registration of servitudes and deed titles.
South African Mining Charter	Focus on sustainable transformation of the mining industry. WCM is compliant with the BEE requirements. Social management and mitigation measures, developed as part of the SIA, are aligned to the Mining Charter.
National Strategy for Sustainable Development and Action Plan 2011 – 2014 (NSSD 1) (2011)	The Strategy for Sustainable Development and Action Plan (NSSD1) is a proactive strategy that regards sustainable development as a long-term commitment, which combines environmental protection, social equity and economic efficiency with the vision and values of the country. It is a milestone in an ongoing process of developing support, and initiating and up-scaling actions to achieve sustainable development in South

Applicable Legislation and Guidelines Used to Compile the Report	Reference Where Applied
	Africa (DEA, 2011) and has outlined the following strategic objectives: • enhance systems for integrated planning and implementation; • sustain ecosystems and use natural resources efficiently; • move towards a green economy; • build sustainable communities; and • respond effectively to climate change. The Act, development plans, development frameworks and bylaws have informed project planning and the need and desirability of the project, and will be taken into account in the assessment and mitigation of impacts during the EIA phase.
National Spatial Development Perspectives (NSDP)	The NSDP (2006) provides a framework for a focused intervention by the State in equitable and sustainable development. It represents a key instrument in the State's drive towards ensuring greater economic growth, buoyant and sustained job creation and the eradication of poverty. It provides: • a set of principles and mechanisms for guiding infrastructure investment and development decisions; • a description of the spatial manifestations of the main social, economic and environmental trends that should form the basis for a shared understanding of the national space economy; and • an interpretation of the spatial realities and the implications for government intervention. The Act, development plans, development frameworks and bylaws have informed project planning and the need and desirability of the project, and will be taken into account in the assessment and mitigation of impacts during the EIA phase.
National Development Plan 2030 (2010)	The National Development Plan aims to ensure that all South Africans attain a decent standard of living through the elimination of poverty and reduction of inequality by 2030. The core elements of a decent standard of living identified in the plan are: • housing, water, electricity and sanitation; • safe and reliable public transport; • quality education and skills development; • safety and security; • quality health care; • social protection; • employment; • recreation and leisure; • clean environment; and • adequate nutrition The Act, development plans, development frameworks and bylaws have informed project planning and the need and desirability of the project, and will be taken into account in the assessment and mitigation of impacts during the EIA phase.
New Growth Path (2010)	South Africa has embarked on a new economic growth path in a bid to create 5 million jobs and reduce unemployment from

Applicable Legislation and Guidelines Used to Compile the Report	Reference Where Applied
	25% to 15% over the next ten (10) years. The plan aims to address unemployment, inequality and poverty by unlocking employment opportunities in South Africa's private sector and identifies seven job drivers. These job drivers have the responsibility to create jobs on a large scale. The seven key economic sectors or "job drivers" for job creation are listed below: • infrastructure development and extension: Public works and housing projects; • agricultural development with a focus on rural development and specifically • "Agro-Processing"; • mining value chains; • manufacturing and industrial development (IPAP); • knowledge and green economy; • tourism and services; and • informal sector of economy The Act, development plans, development frameworks and bylaws have informed project planning and the need and desirability of the project, and will be taken into account in the assessment and mitigation of impacts during the EIA phase.
National Framework for Sustainable Development (2008)	The purpose of the National Framework on Sustainable Development is to enunciate South Africa's national vision for sustainable development and indicate strategic interventions to re-orientate South Africa's development path in a more sustainable direction. It proposes a national vision, principles and areas for strategic intervention that will enable and guide the development of the national strategy and action plan.
National Spatial Development Perspective (2006)	The NSDP 2006 provides a framework for a focused intervention by the State in equitable and sustainable development. It represents a key instrument in the State's drive towards ensuring greater economic growth, buoyant and sustained job creation and the eradication of poverty. Employment opportunities, direct and in-direct will be provide by the proposed mine.
Mpumalanga Economic Growth & Development Path, October 2011	The frameworks have informed project planning and the need and desirability of the project, and will be taken into account in the assessment and mitigation of impacts during the EIA phase.
Mpumalanga Spatial Development framework, January 2019.	Mining, especially coal mining remains one of the provinces key economic sectors, realising the contestation of resources through mining the negative impacts requires management and positive mitigation interventions – environment, water, air pollution and agricultural land. The development frameworks have informed project planning and the need and desirability of the project, and will be taken into account in the assessment and mitigation of impacts during the EIA phase
Nkangala District Municipality IDP (2017-2022)	The Municipality is currently characterized by an increase in coal mining and related activities and other important sectors in this area are agriculture, agricultural product processing, industrial and manufacturing. Natural resources make a

Applicable Legislation and Guidelines Used to Compile the Report	Reference Where Applied
	significant and direct contribution to the Municipalities economy. The development frameworks have informed project planning and the need and desirability of the project, and will be taken into account in the assessment and mitigation of impacts during the EIA phase.
All other relevant national, provincial, district and local municipality legislation and guidelines that may be applicable to the application. Some of these are discussed in the next section but will be discussed in detail within the EIAr / EMPr report.	

5. NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES

(Motivate the need and desirability of the proposed development including the need and desirability of the activity in the context of the preferred location).

The main benefits of the proposed Mining Project are:

- Continued direct economic benefits will be derived from wages, taxes and profits;
- Continued indirect economic benefits will be derived from the procurement of goods and services and the spending power of employees;
- Continued provision of employment opportunities to employees already skilled in within the area.
- Implementation of the proposed project will result in skills development associated with mining;
- It will continue contributing to the economic welfare of the surrounding community by creating working opportunities;
- It will contribute to the upliftment of living standards and the health and safety of the local community;
- The project will result in economic mining of a known resource;
- Reduction in illegal mining and unregulated mining.

The proposed project is aligned with the objectives of the MPRDA (Act 28 of 2002):

- To promote economic growth and mineral development in the Republic;
- To promote employment and advance the social and economic welfare of all South Africans;
- To ensure that the nation's mineral resources are developed in an orderly and ecologically sustainable manner while promoting justifiable social and economic development; and
- To ensure that mining developments contribute towards the social-economic development of the area in which they are operating.

The then Department of Environmental Affairs (DEA) published a Guideline on Need and Desirability (2017) in terms of the Environmental Impact Assessment (EIA) Regulations, 2014 (as amended). The key components are listed and discussed below:

- Securing ecological sustainable development and use of natural resources; and
- Promoting justifiable economic and social development.

According to DEA's (2017) Guideline on Need and Desirability, in order to describe the need for a development, it must be determined whether it is the right time for locating the type of land use and/or activity being proposed. To describe the desirability for a development, it must be determined, whether it is the right place for locating the type of land use and/or activity being proposed. Need and desirability can be equated to the concept of wise use of land which can be determined through asking the question: "what is the most sustainable use of land?" Considering the above, the need and desirability of an application must be addressed separately and in detail answering *inter alia* the questions as indicated in Table 10.

Table 10: Need and desirability considerations

Securing ecological sustainable development and use of natural resources		
1. 1.1	How will this development (and its separate elements/aspects) impact on the ecological integrity of the area? How were the following ecological integrity considerations taken into account? 1.1.1 Threatened Ecosystems, 1.1.2 Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure, 1.1.3 Critical Biodiversity Areas ("CBAs") and Ecological Support Areas ("ESAs"), 1.1.4 Conservation targets, 1.1.5 Ecological drivers of the ecosystem, 1.1.6 Environmental Management Framework, 1.1.7 Spatial Development Framework, and 1.1.8 Global and international responsibilities relating to the environment (e.g. RAMSAR sites, Climate Change, etc.).	The following specialist studies shall be conducted, or existing studies updated in support of this application (also see table 4): • Hydrogeological Assessment and AMD management; • Hydrological Assessment, Wetland Assessment, Plant species plan and landscaping plan; • (including water balance); • Ecological Assessment; • Geotechnical Assessment; • Storm Water Management Plan (including floodlines and topography); • Soil Assessment; • Heritage Impact Assessment; • Paleontological Assessment; and • Closure Plan and Quantum Report. The conclusions of these studies, and the identified impacts and mitigation measures stemming there from will be included in the EIA and EMPR. The need of the project in terms of the eMalahleni SDF will also be further considered in the EIA and EMPR.
1.2	How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity? What measures were explored to firstly avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	Refer to baseline ecological information in Sections 9.8 and 9.9, and the impact assessment and mitigation measures in Section 12.1 of this Scoping Report. These sections will be further expanded in the EIA and EMPR, with the addition of specialist input.
1.3	How will this development pollute and/or degrade the biophysical environment? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	Refer to baseline ecological information in in Sections 9.8 and 9.9, and the impact assessment and mitigation measures in Section 12.1 of this Scoping Report. These sections will be further expanded in the EIA and EMPR, with the addition of specialist input.

1.4	What waste will be generated by this development? What measures were explored to firstly avoid waste, and where waste could not be avoided altogether, what measures were explored to minimise, reuse and/or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?	General waste, hazardous waste and litter will be generated during the life of the mine and these should be kept in designated areas and disposed of to a licensed landfill facility. Other wastes that may cause soil contamination, are from the use of vehicles and loaders during the mining process, which may lead to hydrocarbon spills. Regulations for soil clean-up and management will been prescribed in the EMPr.
1.5	How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	An existing Heritage Impact Assessment is available and this study will be updated for the proposed project.
1.6	How will this development use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	The operation will remove a known resource (coal resource – limited resource) within the designated area. This cannot be reversed. The study area has already been transformed due to existing coal mining already taking place on site. Through implementing good practice environmental management measures and mitigation measures, it will ensure that both human and environment are not negatively affected by the development. Since coal seams are usually associated with wetland related terrain as most coal seams are the result of peat and other organic carbon accumulations over the year, this will always be the areas where coal is found and may be characterised by sensitive features such as wetlands, pans and grasslands. This is why Mpumalanga is so rich in both, as one is usually not found without the other.
1.7	How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardise the integrity of the resource and/or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts? 1.7.1. Does the proposed development exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. de-materialised growth)? (note: sustainability requires that settlements reduce their ecological footprint by using less material and energy demands and reduce the amount of waste they generate, without compromising their quest to improve their quality of life). 1.7.2. Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and intergenerational equity, and are there more important priorities for which the resources should be used (i.e. what	Renewable natural resources may be the use of borehole water, to a limited amount, on-site. Washing and screening (Primary processing) is proposed, which may require additional water. Water requirements have been described above and all water uses will be licensed in terms of the National Water Act. Stormwater management, and the water stemming from the primary processing, will be captured in the PCD infrastructure and re-used and recycled into the process, and may be used as dust suppression around the dirty footprint areas within the area. This will alleviate the requirement for clean make-up water to be sourced from groundwater. Water may also be needed to be removed from the opencast pit section during the project and this will also be re-utilised where possible. No discharges into the environment will be applied, or proposed, for the project.

	are the opportunity costs of using these resources this the proposed development alternative?) 1.7.3. Do the proposed location, type and scale of development promote a reduced dependency on resources?	
1.8	How were a risk-averse and cautious approach applied in terms of ecological impacts? 1.8.1 What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)? 1.8.2 What is the level of risk associated with the limits of current knowledge? 1.8.3 Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	The current knowledge gaps include: Detailed and site-specific information regarding some of the environmental aspects is not yet available for the proposed project area. However, the outstanding information will be generated through the identified specialist studies identified in Section 13.3. While the expected potentially significant impacts have been preliminarily identified as part of this Scoping Process, the impacts on all environmental aspects will be explored in more detail and quantified wherever possible during the EIA Phase. The mitigation measures associated with the impacts need to still be determined. The level of risk is low as this report represents the preliminary scoping level study whilst the EIA and EMPR will be further informed by the various specialist studies and feedback from the I&AP's (during Scoping review). Sufficient information was gathered prior to the onset of this process to indicate that the potential mining of additional coal is feasible. In addition, it is noted that this project extends a current mining operation.
1.9	How will the ecological impacts, resulting from this development, impact on people's environmental right in terms following. 1.9.1 Negative impacts: e.g. access to resources, opportunity costs, loss of amenity (e.g. open space), air and water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts? 1.9.2 Positive impacts: e.g. improved access to resources, improved amenity, improved air or water quality, etc. What measures were taken to enhance positive impacts?	Refer to the impact assessment and mitigation measures in Section 12 in this Scoping Report. These aspects will be further explored in the EIA and EMPR.
1.10	Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.)?	Refer to the impact assessment and mitigation measures in Section 12 in this Scoping Report. These aspects will be further explored in the EIA and EMPR.
1.11	Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?	The Environmental risk assessment for all environmental features will be assessed and included in the EIA/EMPr phase of the project.
1.12	Considering the need to secure ecological integrity and a healthy biophysical	Refer to Section 7 details of the alternatives considered, and Section 12 the advantages and

	environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the "best practicable environmental option" in terms of ecological considerations?	disadvantages of the proposed activity, of this Scoping Report. This aspect will be further explored in the EIA and EMPR.
1.13	Describe the positive and negative cumulative ecological/biophysical impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and existing and other planned developments in the area?	Refer to Section 12 of this Scoping Report. This aspect will be further explored in the EIA and EMPR
"Promoting justifiable economic and social development"		
2.1	What is the socio-economic context of the area, based on, amongst other considerations, the following considerations? 2.1.1 The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any other strategic plans, frameworks of policies applicable to the area, 2.1.2 Spatial priorities and desired spatial patterns (e.g. need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.), 2.1.3 Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.), and 2.1.4 Municipal Economic Development Strategy ("LED Strategy").	The project is aligned with the objectives as coal mining is already an ongoing and historic activity within the area and within Mpumalanga and therefore may not compromise the integrity of the surrounding land uses and neighbouring properties. According to the Nkangala IDP (2020-2021), mining is the largest contributor to the followed by manufacturing, finance, electricity production, construction and transportation. This indicates that coal mining within the local area is prevalent and aligned with current developments found within the local vicinity.
2.2	Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area? 2.2.1. Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs? 2.2.2. Implementation on Social labor Plan (SLP)	Also refer to the comments made above. The proposed project will increase the life of mine, which will ensure that the community projects initiated by the mine will have an increased life. This will complement the local socio-economic initiatives identified for the area.
2.3	How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?	Refer to comments made above. All aspects and comments received from I&APs during the process will be reasonably addressed and incorporated into the final EIA/EMPr submitted to the DMRE. Local economic growth and work opportunities will be main benefits from the project if approved and may address some of the physical, psychological, development, cultural and social needs. Refer to the proposed public participation process in Section 8 of this Scoping Report. This aspect will be further expanded on in the EIA and EMPR.
2.4	Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long-term? Will the impact be socially and economically sustainable in the short- and long-term?	Refer to the impact assessment and mitigation measures in Section 12 of this Scoping Report. This aspect will be further explored in the EIA and EMPR.
2.5	In terms of location, describe how the placement of the proposed development will;	Alternatives have been assessed during the process and the best suited alternative will be described within this application and depicted in the EIA Phase. Refer to Section 7, details of

	2.5.1. result in the creation of residential and employment opportunities in close proximity to or integrated with each other, 2.5.2. reduce the need for transport of people and goods, 2.5.3. result in access to public transport or enable non-motorised and pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms public transport), 2.5.4. compliment other uses in the area, 2.5.5. be in line with the planning for the area, 2.5.6. for urban related development, make use of under-utilised land available with the urban edge, 2.5.7. optimise the use of existing resources and infrastructure, 2.5.8. opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement), 2.5.9. discourage "urban sprawl" and contribute to compaction/densification, 2.5.10. contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs, 2.5.11. encourage environmentally sustainable land development practices and processes 2.5.12. take into account special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.), 2.5.13. the investment in the settlement or area in question will generate the highest socio-economic returns (i.e. an area with high economic potential), 2.5.14. impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area, and 2.5.15. in terms of the nature, scale and location of the development promote or act as a catalyst to create a more integrated settlement?	alternative considered, in this Scoping Report.
2.6	How were a risk-averse and cautious approach applied in terms of socio-economic impacts? 2.6.1. What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)? 2.6.2. What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge? 2.6.3. Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	Specialist studies will be undertaken for the EIA phase of the project. All gap knowledge will therefore be identified and included in the EIA phase of the project. While the expected potentially significant impacts have been preliminarily identified as part of this Scoping Process, the impacts on socio-economic aspects will be explored in more detail and quantified wherever possible during the EIA Phase. The mitigation measures associated with the impacts need to still be determined.
2.7	How will the socio-economic impacts, resulting from this development impact, on people's environmental right in terms following:	Refer to the impact assessment and mitigation measures in Section 12.1 of this Scoping Report. This aspect will be further explored in the EIA and EMPR.

	2.7.1. Negative impacts: e.g. health (e.g. HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts? 2.7.2. Positive impacts. What measures were taken to enhance positive impacts?	The project is proposed within the existing mining right boundary of the 2 Seam Mine, therefore, there are existing impact and mitigation measures in place.
2.8	Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-economic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?	The area where the mining right is proposed, is currently utilised for agriculture and grazing. A Soil, Land Use and Capability and Agricultural Assessment study will be undertaken and included in the EIA report.
2.9	What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?	Refer to the impact assessment and mitigation measures in Section 12 of this Scoping Report. This aspect will be further explored in the EIA and EMPR.
2.10	What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)? Considering the need for social equity and justice, do the alternatives identified, allow the "best practicable environmental option" to be selected, or is there a need for other alternatives to be considered?	Refer to the impact assessment and mitigation measures in Section 12 of this Scoping Report. The mine will be in line with the regulatory requirements and provide financial provision to ensure that the mitigation measures proposed can be carried out. This aspect will be further explored in the EIA and EMPR.
2.11	What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?	By conducting a Scoping and Environmental Impact Assessment Process, the Applicant ensures that equitable access has been considered. Refer to the impact assessment and mitigation measures in Sections 11 and 12 of this Scoping Report. This aspect will be further explored in the EIA and EMPR.
2.12	What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	Refer to the impact assessment and mitigation measures in Section 12 of this Scoping Report. The EIA and EMPR will specify timeframes within which mitigation measures must be implemented.
2.13	What measures were taken to: 2.13.1. ensure the participation of all interested and affected parties, 2.13.2. provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, 2.13.3. ensure participation by vulnerable and disadvantaged persons, 2.13.4. promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means, 2.13.5. ensure openness and transparency, and access to information in terms of the process, 2.13.6. ensure that the interests, needs and values of all interested and affected parties were taken into account, and that adequate recognition were given to all	Refer to Section 8 of this Scoping Report, describing the public participation process to be undertaken for the proposed project.

	forms of knowledge, including traditional and ordinary knowledge, and 2.13.7. ensure that the vital role of women and youth in environmental management and development were recognised and their full participation therein will be promoted?	
2.14	Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g. a mixture of low-, middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)?	Refer to Section 8 of this Scoping Report, describing the public participation process to be implemented for the proposed project. This aspect will be further explored in the EIA and EMPR. The Applicant has a Social Labour Plan in place, which further addresses this aspect.
2.15	What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?	The Mining Right holder will need to draft an Environmental Policy and a Health and Safety Policy, which will regulate activities on the coal mining area. All workers and contractors will need to abide to the policies and framework as specified.
2.16	Describe how the development will impact on job creation in terms of, amongst other aspects: 2.16.1. the number of temporary versus permanent jobs that will be created, 2.16.2. whether the labour available in the area will be able to take up the job opportunities (i.e. do the required skills match the skills available in the area), 2.16.3. the distance from where labourers will have to travel, 2.16.4. the location of jobs opportunities versus the location of impacts (i.e. equitable distribution of costs and benefits), and 2.16.5. the opportunity costs in terms of job creation (e.g. a mine might create 100 jobs, but impact on 1000 agricultural jobs, etc.).	The mine is existing and this project will extend the life of mine ensuring the job security of current workers at the mine. This will be further addressed in the EIAr.
2.17	What measures were taken to ensure: 2.17.1. that there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment, and 2.17.2. that actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures?	The applicant is in the process of applying for the following aspects across different legislation requirements: • Amendment to the Mining Right with a Section 102 Application (this application); • Environmental Authorisation in terms of the NEMA and NEM:WA (this application) • WUL (Department of Water and Sanitation –DWS – Has been initiated). • All legislation that has been incorporated within these processed were discussed within Section regarding Policy and Legislative Content above.
2.18	What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage?	Refer to Section 8 of this Scoping Report, describing the public participation process to be implemented for the proposed project, as well Section 11 (the impact on any national estate), in the Scoping Report. The Applicant also has a Social Labour Plan in place.
2.19	Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?	Refer to the impact assessment and mitigation measures in Section 11 and Section 12 of the Scoping Report. This aspect will be further explored in the EIA and EMPR.

2.20	What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects will be paid for by those responsible for harming the environment?	This will be addressed during the EIA phase of the project, as a Closure report will be submitted as part of the EIAr.
2.21	Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?	Refer to Section 7 (description of the process followed to reach the proposed preferred site), of the Scoping Report. This aspect will be further explored in the EIA and EMPR.
2.22	Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area?	Refer to Section 12 of this Scoping Report. This aspect will be further explored in the EIA and EMPR.

6. PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED

The 2 Seam Mine is an existing operation. Including the additional OC4A and OC4B pits will extend the Life of Mine until 2042.

6.1 EXPLANATION OF TIMEFRAMES

2 SEAM is an ongoing operation, with current mining activities being undertaken on OC4.

The majority of the infrastructure is already erected and will be utilized to support the mining and beneficiating the coal, service the trucks and excavators, crush, screen and blend the coal, weighbridge to measure the coal leaving site, a beneficiation plant will be erected. The western portion of the mine will be sealed off from the eastern portion using concrete walls placed in three tunnels, these walls will be pinned into the rock above and below the tunnels for extra stability.

The drilling, concreting and pinning of the Seals will take 5 months from inception. The dewatering will take 6 months. The construction of the beneficiation plant will take 6 months from inception to commissioning.

The excavation and development of the proposed river diversion and berm wall is 6 months. Continuity of mining from OC 4 to OC 4A can only commence once the river has been diverted.

Mining from OC 4 to OC 4B can only commence once the water level in the OC 4 area has been lowered sufficiently to enable the mining to start and thus after the walls are sealed and pinned and the water has been lowered, roughly 9 months from commencement of water sealing.

The OC 6 area can commence mining once the water sealing has taken place and the OC 6 area has been dewatered. OC 6A can commence Mining at the same time if required.

The OC 5 area can commence mining at any time and is not dependent on water management facilities as only the 4 upper and 4 lower seams will be accessed as this point in time.

During the operational phase the following activities will be conducted, the operational phase will last for 20 years:

Construction of haul roads, 1 month. OC 4A and OC 4B do not require new haul roads but utilize the existing haul roads from OC 4.

Preparation of topsoil, subsoil and overburden stockpiling areas, 1 month in the OC 6 and OC 6A areas, all other areas will commence with current roll over rehabilitation.

- Construction of the storm water diversion trenches takes place concurrently with the above;
- Excavation of extra box-cuts where necessary, OC 5 and OC 4A and OC 4B do not require box cuts.
- Construction of the pollution control facilities such as extra clean water and dirty water drains;
- Construction of infrastructure to support all mining and engineering operations. Formation of the topsoil, subsoil and overburden stockpiles for the various opencast pits.

This phase will take in the order of twenty years to complete:

- Systematic removal of the coal seams by opencast mining methods (Refer to the Mining layout Plan); Transporting and stockpiling of ROM;
- Disposal of mine affected water into the pollution control dams and to put out fires from underground sources; Transporting of coal products; Utilisation of mine infrastructure
- The decommissioning phase is taken to begin once all economically exploitable coal reserves have been extracted. This phase the mine is expected to take not more than six years.
- Removal of all mine infrastructures; Filling of all remaining voids and final shaping of the rehabilitated opencast pit; Removal of the carbonaceous layer from the product stockpiling area and haul roads; Ripping of all infrastructure areas; top soiling and Seeding of the mined out topsoiled and rehabilitated surfaces.
- The mine closure phase will be dedicated to the maintenance of rehabilitated areas as well compiling a closure plan.
- Additional water management, product and overburden stockpiling areas will be constructed to service the new mining areas.
- Post mining, the site will be used as a washing, beneficiating, crushing, screening and blending site for coal supply to the export, Eskom and Inland markets.

6.2 EXPLANATION OF THE PRODUCTION BUILD UP PERIOD ONCE PRODUCTION COMMENCES

OC 4A and OC 4B Opencast mining areas will commence with Topsoil clearance, softs removal and drilling and blasting of the hard overburden above the number 2 seam as part of the steady state from OC 4 opencast.

It will take 2 months on the ramp up to be in steady state for these two opencasts, both the number 2 and number 1 seams will start on thin seam mining of the various layers the 2 and 1 seam steady state will be reached in month 3 at 60 000 – 100 000 tons per month.

OC 6 will commence with a major box cut from surface to the 4 upper coal seam, the overburden will be placed on an overburden dump, the topsoil will be placed as a visual barrier, the softs will be placed on a softs dump. The coal will be removed to the crushing and screening area located at the OC 2 area. Box cutting through the interseam parting to the 4 Lower will take place and then the 4 Lower will be removed. The major 4 Lower to 2 Seam parting will be drilled and blasted and placed on the overburden dump.

The number 2 seam will be extracted in three tranches; 2 roof and roadway mix will be taken to the crushing and screening area and then the pillars removed to the stockpiling areas and then the floor will be extracted. The parting between the 2 and 1 seams will be drilled, blasted and placed on the overburden dump. The number 1 seam will be drilled and blasted and will be crushed and screened for markets.

The process starts again but the burdens are dozed into the box cut from strip 1 and each of the coal seams are removed. The mine will end up with 13 benches of which 6 may be linked to the mined box cut. On strip 3 concurrent rehabilitation will commence and will be continuous. The mining method will be shovel and truck; roll over methodology, drilling and blasting of the hard burdens will take place when necessary. Steady state will be 100 000 tons per month.

6.3 EXPLANATION OF PRODUCTION DECLINE PERIOD (AS GRADES DETERIORATE)

Production will decline towards the end of the mine's life not through a quality drop, but rather through having mined out all the coal.

During the 20-year life, the pits will be sequenced as they become available:

- OC 4A, OC 4B, OC 5 can be mined in sequence
- OC 6 and OC 6A can be mined in sequence

7. DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED SITE

(NB!! – This section is not about the impact assessment itself; It is about the determination of the specific site layout having taken into consideration (1) the comparison of the originally proposed site plan, the comparison of that plan with the plan of environmental features and current land uses, the issues raised by interested and affected parties, and the consideration of alternatives to the initially proposed site layout as a result).

i) Details of all alternatives considered

(With reference to the site plan provided as Appendix D).

(a) the property on which or location where it is proposed to undertake the activity;
(b) the type of activity to be undertaken;
(c) the design or layout of the activity;
(d) the technology to be used in the activity;
(e) the operational aspects of the activity; and
(f) the option of not implementing the activity)

The identification of alternatives is a key aspect of the success of the scoping process. All reasonable and feasible alternatives must be identified and screened to determine the most suitable alternatives to consider and assess in the EIA phase. There are, however, some significant constraints that have to be taken into account when identifying alternatives for a project of this scope. Such constraints include social, financial and environmental issues, which will be discussed in the evaluation of the alternatives. Alternatives can typically be identified according to:

- Location/layout/design alternatives;
- Process alternatives;
- Technological alternatives; and
- Activity alternatives (including the No-go option).

For any alternative to be considered feasible such an alternative must meet the need and purpose of the development proposal without presenting significantly high associated impacts.

The alternatives are described, and the advantages and disadvantages are presented in this section. It is further indicated which alternatives are considered feasible from a technical as well as environmental perspective.

Alternatives can also be distinguished into discrete or incremental alternatives. Discrete alternatives are overall development options, which are typically identified during the pre-feasibility, feasibility and or scoping phases of the EIA process (DEAT; 2004). Incremental alternatives typically arise during the EIA process and are usually suggested as a means of addressing identified impacts. These alternatives are closely linked to the identification of mitigation measures and are not specifically identified as distinct alternatives. This section provides information on the development footprint alternatives, the properties considered, as well as the type of activity, activity layout, technological and operational aspects of the activity.

7.1 DETAILS OF LOCATION ALTERNATIVES

The section below describes the site / location alternatives considered as part of the project. 2 Seam Mine is an existing operational mine, and has been subject to previous environmental processes, which considered alternatives in the form of both development and land use alternatives prior to approval.

7.1.1 DETAILS OF DEVELOPMENT PROPERTY

2 Seam is a mining company holding a mining right over the proposed amendments within the mining right and, therefore, there is no practical development alternative for the future mining area. The proposed changes to the infrastructure and the additional opencast mining area have taken into consideration economic viability and practicality as well as the location of the coal resource.

7.1.2 CONSIDERATION OF PROPERTY

The proposed amendment of the existing MWP includes areas that are already included in the existing Mining Rights. Therefore, no other alternatives were considered with regards to the consideration of property.

7.1.3 LOCATION, LAYOUT OR DESIGN OF THE ACTIVITY

Numerous alternatives were evaluated with regard to the extent of the area to be mined, mostly linked to the presence of surface infrastructure within and adjacent to the target coal resource. The layout alternatives at 2 Seam are limited due to existing infrastructure. The proposed layout for the coal wash plant, the tailings facility and the PCD's is therefore determined by the location of existing infrastructure and previous opencast areas in order to minimise impacts on the environment.

The proposed locations are the best option, for the following reasons:

- The mining right already belongs to 2 SEAM,
- There are proven coal reserves on the properties;
- The area is in close proximity of a potential market;

- There are already significant operational and process infrastructure available close by; and
- Access to the site will be easy.

The preliminary layout will be investigated further in the EIA phase, and where necessary alternative locations and options assessed. If any infrastructure is planned to be located in areas identified as being of high environmental sensitivity or if any other significant environmental concerns are noted with regards to the proposed layout then the layout may be amended based on these findings.

7.2 PROCESS ALTERNATIVES

The subsections below describe the various process alternatives to be considered.

7.2.1 DISPOSAL OF WASTE

Two main options have been identified for assessment in the EIA phase and will be investigated for disposal of carboniferous waste. These include:

Process Alternative P1a - *Disposal to surface waste disposal facility- located on old rehabilitated mine area.*

Process Alternative P1d - Disposal of discard and filter cake to pit.

7.2.2 WATER SUPPLY FOR DUST SUPPRESSION

Two alternatives for the supply of water were identified, namely:

Process Alternative P2a - *Water obtained from dirty water containment facilities*: Water would be obtained from dirty water containment facilities (i.e.: PCD's).

Process Alternative P2b - *Water from natural ground or surface water resources*: For this alternative water would be abstracted from boreholes.

7.2.3 MINING METHOD

Current mining on site is done by opencast mining methods. Due to the depth of the coal resource in the area no other mining method alternatives have been taken into consideration. Underground mining was not considered as an alternative as the coal seams are located closer to the surface. Underground mining will be much more expensive, unnecessary and will have an effect on the financial feasibility of the project.

7.3 TECHNOLOGICAL ALTERNATIVES

The subsections below describe the technological alternatives considered in this Scoping Report.

7.3.2 PROCESSING TECHNOLOGY TO BE USED IN THE ACTIVITY

There are two main types of washing processing technology which could be used for coal beneficiation, namely:

- Technology Alternative T1a - Dry processing: A dry coal separator uses less water than a conventional wet processing alternative. The main and most obvious advantage of dry processing of coal is that no water is required. Dry processing is, however, not applicable on all mines and with all coal types and quantities.
- Technology Alternative T1b - Wet washing: This is the conventional processing alternative employed at most processing facilities.

2 Seam proposes to use wet washing (T1b) as the technology alternative.

7.3.1 TRANSPORTATION OF COAL

There are several coal product transport options. The feasibility of these options would hinge on the final market for the coal, as well as the proximity of available transport infrastructure. The following alternatives have been considered:

- Technology Alternative T2a – Road: This would involve the transport of the product by existing road networks to the respective buyer.
- Technology Alternative T2a – Rail: This option would involve transport of the coal by rail utilizing a railway siding.
- Technology Alternative T2a - Use of conveyor: This option would involve transport of the coal by conveyor to the buyer.

The existing operation makes use of road transport (Alternative T2 a) due to the easy access to the road network. This is the alternative currently used to transport the coal.

7.4 ACTIVITY ALTERNATIVES

No feasible activity alternatives exist, unless stating that farming and agriculture could be an activity alternative. This will not benefit many parties as the area has already been subjected to coal mining (and prospecting), thereby decreasing the carrying capacity and agricultural return. This could be assessed during the EIA Phase to determine and expand on this matter.

7.5 NO GO OPTION

The no-go option refers to the alternative of the proposed project not going ahead at all. This alternative will avoid potentially positive and negative impacts on the environment and the status quo of the area would remain, which is the conditions of the current baseline environment without any deviations or expansions.

The implications of the no-go option will be evaluated as part of the EIA, focusing on comparing potential impacts from the proposed project with the status quo, and will be particularly relevant should it be found, that detrimental impacts cannot be managed to an acceptable level.

8. DETAILS OF THE PUBLIC PARTICIPATION PROCESS TO BE FOLLOWED

(Describe the process undertaken to consult interested and affected parties including public meetings and one on one consultation. NB the affected parties must be specifically consulted regardless of whether they attended public meetings. (Information to be provided to affected parties must include sufficient detail of the intended operation to enable them to assess what impact the activities will have on them or on the use of their land).

8.1 PUBLIC PARTICIPATION

The Public Participation Process (PPP) is a requirement of several pieces of South African legislation and aims to ensure that all relevant Interested and Affected Parties (I&APs) are consulted, involved and their comments are considered and a record of all comments and responses is included in the reports submitted to the Authorities. The process ensures that all stakeholders are provided an opportunity as part of a transparent process which allows for a robust and comprehensive environmental study. The PPP for the proposed project needs to be managed sensitively and according to best practises to ensure and promote:

- Compliance with international best practice options;
- Compliance with national legislation;
- Establishment and management of relationships with key stakeholder groups; and
- Involvement and participation in the environmental study and authorisation/approval process.

As such, the purpose of the PPP and stakeholder engagement process is to:

- Introduce the proposed project;
- Explain the authorisations required;
- Explain the environmental studies already completed and yet to be undertaken (where applicable);
- Solicit and record any issues, concerns, suggestions, and objections to the project;
- Provide opportunity for input and gathering of local knowledge;
- Establish and formalise lines of communication between the I&APs and the project team;
- Identify all significant issues for the project; and
- Identify possible mitigation measures or environmental management plans to minimise and/or prevent negative environmental impacts and maximize and/or promote positive environmental impacts associated with the project.

8.2 LEGAL FRAMEWORK

The PPP for the proposed project will be undertaken in accordance with the requirements of the MPRDA and the NEMA EIA Regulations (2014), as amended in 2021, as well as the NWA and in line with the principles of Integrated Environmental Management (IEM). IEM implies an open and transparent participatory process,

whereby stakeholders and other I&APs are afforded an opportunity to comment on the project and have their views considered and included as part of project planning.

The proposed public participation process for the 2 Seam Mine is discussed in Sections 8.2.1 to 8.2.5 below.

8.2.1 SECTION 39: ACTIVITY ON LAND OWNED BY PERSON OTHER THAN THE PROPONENT - SUBREGULATION 1 AND 2(A), (B) AND (C)

(1) If the proponent is not the owner or person in control of the land on which the activity is to be undertaken, the proponent must, before applying for an environmental authorisation in respect of such activity, obtain the written consent of the landowner or person in control of the land to undertake such activity on that land.

(2) Subregulation (1) does not apply in respect of—

(a) linear activities;

(b) activities constituting, or activities directly related to prospecting or exploration of a mineral and petroleum resource or extraction and primary processing of a mineral or petroleum resource; and

(c) strategic integrated projects as contemplated in the Infrastructure Development Act,2014.

As the application is for mining related activities, the proponent is not required to obtain written consent of the landowner or person in control of the land to undertake the activity.

8.2.2 SECTION 41: PUBLIC PARTICIPATION PROCESS

8.2.2.1 SECTION 41, SUBREGULATION 2 (A) – SITE NOTICES

1) The person conducting a public participation process must take into account any relevant guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of an application or proposed application which is subjected to public participation by—

a) fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of—

i. the site where the activity to which the application or proposed application

ii. relates is or is to be undertaken; and

iii. any alternative site.

Ten site notices were erected within and surrounding the proposed project area. The site notices have been placed in conspicuous areas that are accessible by the public at the boundary. The site notices include a short background to the proposed project, the locality of the project, information on the activities that are being applied for and details of how the Environmental Assessment Practitioner (EAP) can be contacted to provide any comments. Refer to Appendix D2 for a copy of the site notice and where these have been placed.

8.2.2.2 SECTION 41, SUBREGULATION 2 (B) – WRITTEN NOTICE

b) giving written notice, in any of the manners provided for in section 47D of the Act, to—

i. *the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;*
ii. *owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;*
iii. *the municipal councillor of the ward in which the site and alternative site is situated and any organisation of ratepayers that represent the community in the area;*
iv. *the municipality which has jurisdiction in the area;*
v. *any organ of state having jurisdiction in respect of any aspect of the activity; and*
vi. *any other party as required by the competent authority;*

All preidentified I&APs have been provided with a written notice (refer to Appendix D3), together with a background information document (BID) (refer to Appendix D4 for a copy of the BID). Written notices have also be sent to the municipality that has jurisdiction in the area and all organs of state as preidentified and that register for the project. This includes the following:

- South Africa Heritage Resource Agency (SAHRA);
- Department of Roads and Transport;
- Nor Economic Development & Tourism which provides oversight role on the work of three agencies which are: Mpumalanga Economic Growth Agency (MEGA), Mpumalanga Economic Regulator (MER) and Mpumalanga Tourism and Parks Agency (MTPA).
- Mpumalanga Department: Agriculture, Rural Development, Land and Environmental Affairs;
- Department of Agriculture Forestry and Fisheries.
- Department of Mineral Resources and Energy (DMRE); and
- Department of Water and Sanitation (DWS).
- Department of Environmental Affairs and Forestry;
- Mpumalanga Agriculture, Land Reform and Rural Development;
- Mpumalanga Department of Economic Development and Tourism;
- Mpumalanga Parks and Tourism Agency;
- Mpumalanga Public Works, Roads and Transport;
- Mpumalanga Department of Human Settlements;
- Department of Social Development – Provincial;
- South African National Roads Agency;
- Provincial Heritage Authority;
- Eskom;
- eMalahleni Local Municipality;
- Nkangala District Municipality; and
- Ward Councillor/s

8.2.2.3 DETAILS OF BACKGROUND INFORMATION DOCUMENT (BID)

A BID in English has been compiled for distribution (refer to Appendix D4 for a copy of the BID). The BID contains the following information:

- Project name;
- Applicant name;
- Project location (including map of study area);
- Description of the EA application process, EIA flow chart, and public participation process;
- Information on future document review opportunities;
- A detailed questionnaire/ I&AP registration form; and
- Relevant EAP contact person for the project.

Copies of the BID were emailed to the current landowners and adjacent landowners. Copies of the BID were also given to occupiers of the site and I&APs via direct consultation or be emailed to potential I&APs. Copies of the BID documents were hand delivered to the local communities and also posted via registered mail to government departments and municipalities. The various government departments and municipalities shall receive copies of the BID.

Copies of the BID were distributed to any other parties if required by the competent authority. The BID and distribution of the BID's will be presented in the Scoping Report (refer to Appendix D).

8.2.2.4 SECTION 41, SUBREGULATION 2 (C), (D) & (E) – ADVERTISEMENTS

c) placing an advertisement in—

i. one local newspaper; or

ii. any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;

d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official Gazette referred to in paragraph (c)(ii); and

e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desirous of but unable to participate in the process due to—

i. illiteracy;

ii. disability; or

iii. any other disadvantage.

An advertisement was placed in the local newspaper at the start of the project (notification period) containing the following information:

- Project name;
- Applicant name;
- Project location;

- Nature of the activity; and
- Relevant EAP contact person for the project.

An English advertisement will also be placed in the local newspaper to advise I&APs of the availability of the Scoping Report for review. Information in the advert will include a short project background (including project and applicant name), project location, nature of the activity, information regarding the availability of the reports for review and contact details for the relevant EAP where I&APs can send comments/concerns. A copy of the advert is attached in Appendix D5.

8.2.2.5 SECTION 41, SUBREGULATION 3

3) A notice, notice board or advertisement referred to in subregulation (2) must—

a) give details of the application or proposed application which is subjected to public participation; and

b) state—

i. whether basic assessment or S&EIR procedures are being applied to the application;

ii. the nature and location of the activity to which the application relates;

iii. where further information on the application or proposed application can be obtained; and

iv. the manner in which and the person to whom representations in respect of the application or proposed application may be made.

As indicated in Section 8.2.2.2 and Section 8.2.2.4 above, both the site notice and the adverts will include all information as per the requirements of Section 41, subregulation 3.

The EAP's contact number and email address will be stated on the site notice and adverts. Comments/concerns and queries will be encouraged to be submitted in either of the following manners:

1. Electronically (email);
2. Telephonically; and/or
3. Written letters.

8.2.2.6 SECTION 41, SUBREGULATION 4

4) A notice board referred to in subregulation (2) must—

a) be of a size of at least 60cm by 42cm; and

b) display the required information in lettering and in a format as may be determined by the competent authority.

Site notices erected around the boundary of the proposed project area were at least 60cm by 42 cm. The proposed format is Arial and the font size is 14. A locality map is included on the site notice.

Refer to Appendix D2 for a copy of the site notice, as well as a locality map of where the site notices have been placed.

8.2.2.7 SECTION 41, SUBREGULATION 5, 6 & 7

5) Where public participation is conducted in terms of this regulation for an application or proposed

application, subregulation (2)(a), (b), (c) and (d) need not be complied with again during the additional public participation process contemplated in regulations 19(1)(b) or 23(1)(b) or the public participation process contemplated in regulation 21(2)(d), on condition that—

a) such process has been preceded by a public participation process which included compliance with subregulation (2)(a), (b), (c) and (d); and

b) written notice is given to registered interested and affected parties regarding where the—

i. revised basic assessment report or, EMPr or closure plan, as contemplated in regulation 19(1)(b);

ii. revised environmental impact assessment report or EMPr as contemplated in regulation 23(1)(b); or

iii. environmental impact assessment report and EMPr as contemplated in regulation 21(2)(d);

may be obtained, the manner in which and the person to whom representations on these reports or plans may be made and the date on which such representations are due.

Subregulation 5 is not applicable to the project, as the Application is a new Application for the proposed project and does not include any revised reports.

6) When complying with this regulation, the person conducting the public participation process must ensure that—

a) information containing all relevant facts in respect of the application or proposed application is made available to potential interested and affected parties; and

b) participation by potential or registered interested and affected parties is facilitated in such a manner that all potential or registered interested and affected parties are provided with a reasonable opportunity to comment on the application or proposed application.

All relevant facts in respect of the proposed application, will be made available to potential I&APs. Both the Scoping Report and the Environmental Impact Assessment Report with the Environmental Management Programme Report will be made available for public review and comment for a period of 30 days each.

7) Where an environmental authorisation is required in terms of these Regulations and an authorisation, permit or licence is required in terms of a specific environmental management Act, the public participation process contemplated in this Chapter may be combined with any public participation processes prescribed in terms of a specific environmental management Act, on condition that all relevant authorities agree to such combination of processes.

As this is an integrated application, namely an environmental authorisation and waste licence application in terms of the NEMA, a mining right application in terms of the MPRDA and a water use licence application in terms of the NWA, it is proposed to combine the public participation process with all notification documentation and other public participation opportunities referring to all three authorisation/permit or licence.

8.2.3 SECTION 42: REGISTER OF INTERESTED AND AFFECTED PARTIES

8.2.3.1 INTERESTED AND AFFECTED PARTY (I&AP) DATABASE

A proponent or applicant must ensure the opening and maintenance of a register of interested and affected parties and submit such a register to the competent authority, which register must contain the names, contact details and addresses of—

a) all persons who, as a consequence of the public participation process conducted in respect of that application, have submitted written comments or attended meetings with the proponent, applicant or EAP;

b) all persons who have requested the proponent or applicant, in writing, for their names to be placed on the register; and

c) all organs of state which have jurisdiction in respect of the activity to which the application relates.

As part of the PPP an I&AP database has been developed and will be continuously updated for the project. A copy of the database to date is included as Appendix D of the Scoping Report.

8.2.4 SECTION 43: REGISTERED INTERESTED AND AFFECTED PARTIES ENTITLED TO COMMENT ON REPORTS AND PLANS

8.2.4.1 INTERESTED AND AFFECTED PARTIES AND COMMENTING AUTHORITIES

43) 1). A registered interested and affected party is entitled to comment, in writing, on all reports or plans submitted to such party during the public participation process contemplated in these Regulations and to bring to the attention of the proponent or applicant any issues which that party believes may be of significance to the consideration of the application, provided that the interested and affected party discloses any direct business, financial, personal or other interest which that party may have in the approval or refusal of the application.

2) In order to give effect to section 24O of the Act, any State department that administers a law relating to a matter affecting the environment must be requested, subject to regulation 7(2), to comment within 30 days.

Stakeholders who are captured/registered on the database for the project shall include 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 Agriculture, Forestry and Fisheries (DAFF – now grouped with Environmental Affairs, forming DEFF since 2019) 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.

8.2.4.2 DECISION MAKING AUTHORITIESIN TERMS OF THE ENVIRONMENTAL AUTHORISATIONA DN WATER USE LICENCE

The decision-making authorities includes the:

- Department of Mineral Resources and Energy (DMRE); and
- Department of Water and Sanitation (DWS) – (Water Use License).

I&APs who attend any public open days/public meetings and /or submitted contact details will be registered on the I&AP database. The database will be updated on an on-going basis throughout the process and included as an Appendix to the Scoping Report and the Environmental Impact Assessment Report, as well as the Integrated Water and Waste Management Plan.

8.2.4.3 ENVIRONMENTAL AUTHORISATION AND MINING RIGHT APPLICATION

- Notification:

All potential I&APs will be notified by means of and advertisement, site notices and/or notification letter and be requested to register as an I&AP for the proposed project.

- Scoping Phase:
    - During the Scoping phase the I&APs shall have the opportunity to comment on the Scoping Report, which will be made available for public review for 30 days. Registered I&APs will be notified of the availability of the Scoping Report. The report will be made available electronically via a downloadable link and a hard copy of the report will be made available in at the 2 Seam Mine. (All necessary measures will be put in place to ensure that the COVID-19 protocols are adhered to when reviewing the document. Should you require a CD copy of the report, please contact ELEMENTAL. Upon request, Zoom, Microsoft teams and skype meetings will be arranged and communicated with registered I&APs, together with a hand sanitiser);
    - Copies of the Scoping Report will be submitted to stakeholders (SAHRA and the Nkangala District Municipality and government departments (DMRE and DWS) review.
    - All comments received during the scoping phase will be included as an Appendix in the Final Scoping Report to be submitted to the DMRE.

8.2.5 SECTION 44: COMMENTS OF INTERESTED AND AFFECTED PARTIES TO BE RECORDED IN REPORTS SUBMITTED TO COMPETENT AUTHORITY

8.2.5.1 PUBLIC MEETINGS AND OPEN DAYS

A public meeting will be held for the scoping phase of the project. Zoom meetings, Microsoft Team Meetings, Skype, and/or phone calls with landowners and I&AP's will be undertaken. The purpose of these meetings for the Scoping Phase will be to introduce the project and to get the potential Interested and Affected parties to

register, as well as raise any concerns or issues that the I&APS may have with regards to the proposed 2 Seam mine amendment project. Notes of the meetings will be included in the Final Scoping Report as an Appendix.

8.2.5.2 SUMMARY OF ISSUES RAISED BY I&APS FROM PUBLIC PARTICIPATION

All issues raised and / or comments received will be included in the Public Participation Report, which will be attached as an Appendix in the Scoping Report and updated for the EIAr to be submitted to the competent authority.

Comments received to date from the PPP session during the initiation of the Mining Right Application have been included in Table 11.

Summary of issues raised by I&APs

(Complete the table summarising comments and issues raised, and reaction to those responses)

Comments received to date are listed below. Comments received during the public review period will be updated in this section when the scoping report is submitted to the Competent Authority. See Appendix D7.

Table 11: Summary of issues raised

Name and Surname	Issues raised	Response provided by project team

9. THE ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE SITE: BASELINE ENVIRONMENT

(Type of environment affected by the proposed activity. (Its current geographical, physical, biological, socio-economic, and cultural character)

The description of the baseline receiving environment (on site and surrounding) was obtained from the studies undertaken by the specialist team from existing documentation as part of the original IWWMP and EIA/EMPR. Various specialist assessments (as indicated in Section 1) will be undertaken for the EIA phase of the project. The information for the baseline environment will be updated accordingly.

9.1 TOPOGRAPHY

The topography across the Project site is slightly undulating with the general gradient forming (3° to 10°) towards the north-northeast where the Olifants River borders the site. Surface elevation ranges between ~1,530 m above Mean Sea Level (mamsl) and ~1,560 mamsl with some old, flooded, opencast mine workings and rehabilitated waste rock dumps superimposed on the relief. Wetlands have formed in some of the flooded opencasts and vary from small scale vegetated depressions to large deeply etched features.

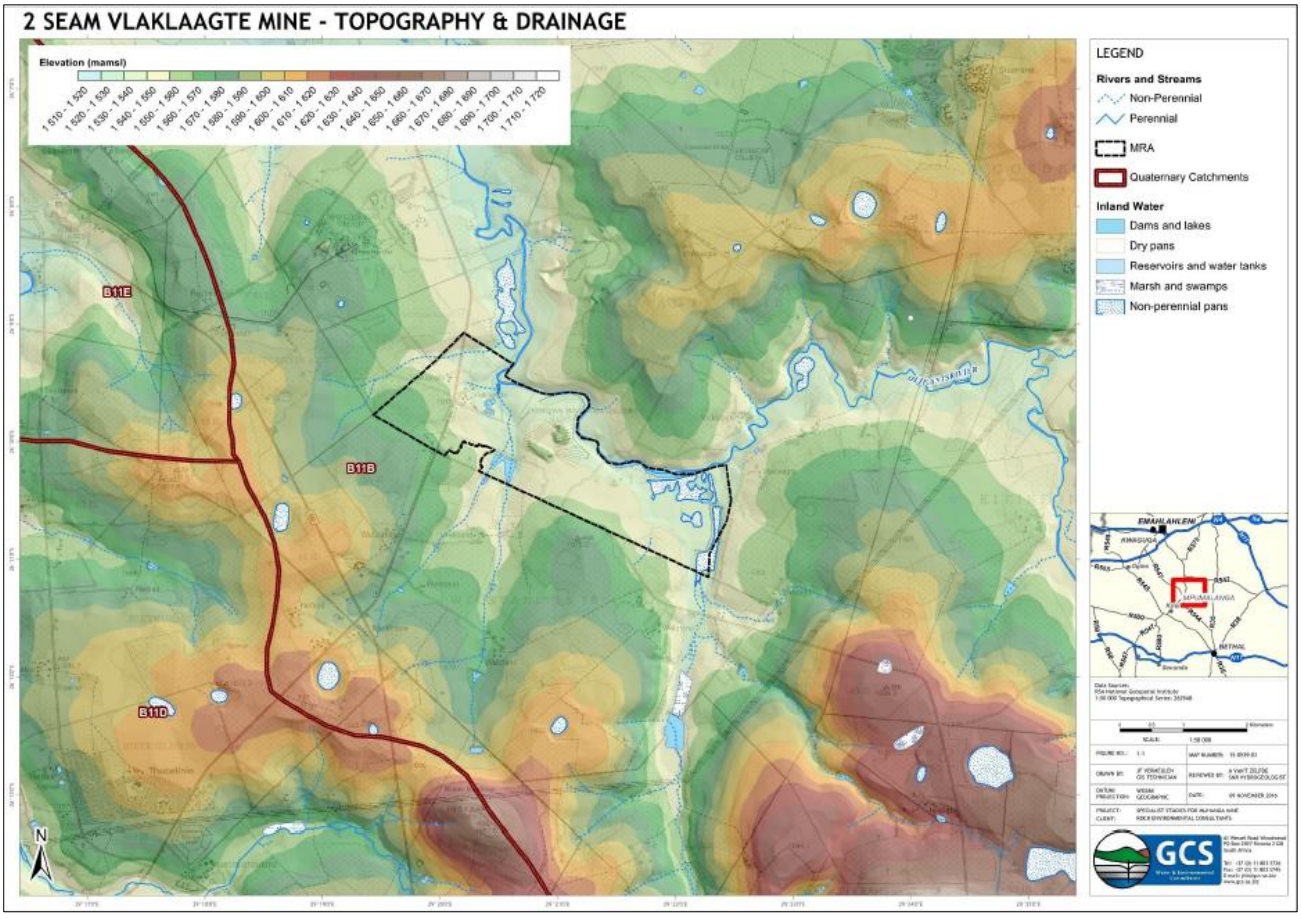

Figure 10: Topography of the 2 Seam Mine

9.2 GEOLOGY

9.2.1 REGIONAL GEOLOGY

All of the known coal deposits in South Africa are hosted in sedimentary rocks of the Karoo Basin, a large foreland basin which developed on the Kaapvaal Craton and filled between the Late Carboniferous and Middle Jurassic periods. The Karoo Supergroup is lithostratigraphically subdivided into the Dwyka, Ecca and Beaufort groups and succeeded by the Molteno, Elliot, Clarens, and Drakensburg formations. The coal ranges in age from early Permian (Ecca Group) through to Late Triassic (Molteno Formation) and is predominantly bituminous to anthracitic in rank, which is classified in terms of metamorphism under influence of temperature and pressure.

Nineteen coalfields have been defined within the Karoo Basin, based on variations in sedimentation, origin, formation, distribution and coal quality. These variations are in turn related to specific conditions of deposition and the local tectonic history of each area.

Sediments of the Dwyka Group and the coal-bearing Ecca Group developed on an undulating pre-Karoo erosion surface. The undulating nature of this surface has had a large influence on the thickness and depth of the deposited coals seams. Post-Karoo erosion removed large parts of the stratigraphic column including substantial volumes of coal along the northern margin of the coalfield, exposing pre-Karoo rocks along the northern and western boundaries of the coalfield.

The coal seams are usually separated by coarse to fine-grained sandstone, siltstone and/or shale at the top. Glauconitic sandstones, indicative of transgressive marine periods, are present above the No.4 and No.5 Seams. The coal zone is overlain by another deltaic sequence, which consists of sandstone and sandy micaceous shale and siltstone with varying thickness (approximately 60 to 100m thick).

The Karoo sediments are practically undisturbed and geological structures (e.g. faults, shears, associated fracturing) are rare. However, fractures are common in rocks such as sandstone and coal. Dolerite intrusions, in the form of sills or dykes cause in some locations various mining problems (i.e. devolatised coal, weakened roof strata and/or displaced coal seams), where near vertical dykes have very little displacement associated transgression through the seam.

Sill transgressions, on the other hand, generally results in displacement of the coal seams and strata. The magnitude of these displacement being dependent on a number of factors, including sill thickness and presence / orientation of pre-existing zones of weakness. These intrusions introduce local structural complexity by displacing seams relative to one another and isolating blocks of coal. Figure 5.1 presents the geology of the regional study area.

9.2.2 LOCAL GEOLOGY

The 2 Seam Mine falls within the Springs-Witbank Coalfield, comprising sediments of the Dwyka Group and the central lithostratigraphic coal-bearing unit of the Ecca Group, namely the Vryheid Formation. Together they represent part of the Karoo Supergroup, which were deposited on an undulating pre-Karoo floor comprising primarily felsites of the Bushveld Complex and other ancient strata such as the Waterberg Group and Transvaal

Supergroup sedimentary rocks. These strata had a significant influence on the nature, distribution and thickness of many of the Karoo Supergroup sedimentary formations, including the coal seams.

The sequence typically comprises, from the base upwards a diamictite of probable glacial origin, pro-glacial varved siltstone and pebbly mudstone, and paraglacial gravel and conglomerate, overlain by swamp, fluviodeltaic and shoreline deposits. The five classically recognized coal seams of the Witbank Coalfield, numbered from the base up as numbers 1, 2, 3, 4 and 5 respectively, occur in strata comprised of sandstone with subordinate mudstone, siltstone and shale, and are typically contained within a 70m succession. Gluaconitic sandstones, which form distinctive markers, occur above the Seam-4A and Seam-5. Strata overlying the Seam-5 are mainly arenaceous. The surface geology for the study area is presented in

Coal seam topography and distribution are commonly controlled by pre-Karoo topography, with surface topography limiting the distribution of the Seam-3, Seam-4 and Seam-5 seams. Parting thicknesses between seams remain remarkably constant. Steeper dips are encountered where seams abut against pre-Karoo hills. Seam thicknesses increase towards the deeper parts of depositional valleys and decreases towards the ridges. The Seam-1 is not always developed, or may be unrecognisable when followed directly by the Seam-2.

Except for the central portion, virtually the whole Springs-Witbank Coalfield has been intruded by dolerite dykes and sills. The sills often transgress and lift the coal seams, and have degraded large quantities of coal.

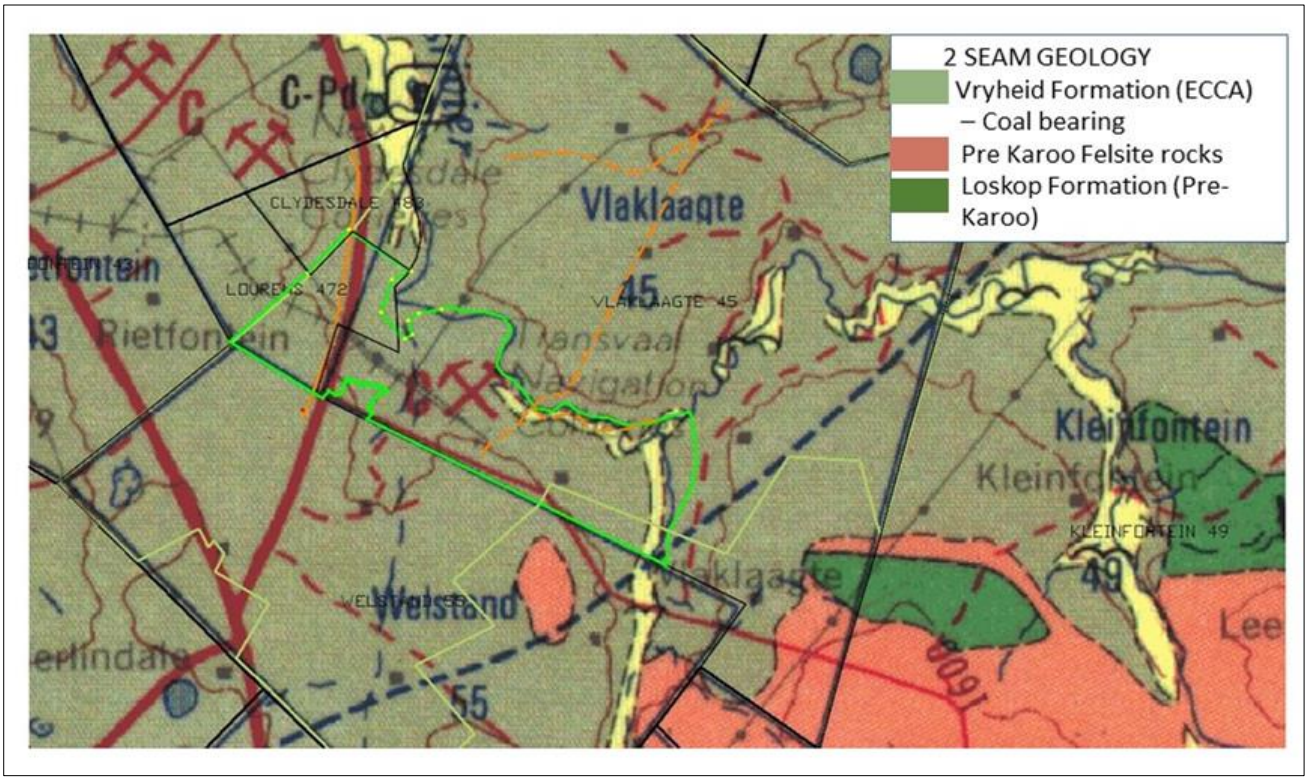

Figure 11: Regional Geology

9.3 CLIMATE

The project area is situated in the summer rainfall region of southern Africa. The climate is temperate with hot summers and dry cold winters. Summer precipitation occurs in the form of mist, drizzle, hail and thunderstorms.

9.3.1 TEMPERATURE

At Bethal, the mean daily maximum exceeds 24°C between November and March, the hottest months. Average daily maximum temperatures in the winter months (May-August) range from 16.5°C to 19.9°C. The mean minimum summer temperatures range from 11.8°C (November and March) to 13.8°C (January) with winter mean minima ranging from 0.8°C to 4.4°C. See Table 12 for maximum and minimum temperatures. for maximum and minimum temperatures.

Table 12 : Mean monthly temperature

Month	Average daily maximum temperature (ºC)	Average daily minimum temperature (ºC)	Mean daily temperature (ºC)
Jan	25.6	13.8	19.7
Feb	25.2	13.2	19.2
March	24.6	11.8	18.2
Apr	21.8	8.6	15.1
May	19.5	4.4	11.9
Jun	16.5	0.8	8.7
Jul	17.1	1.0	9.0
Aug	19.9	3.8	11.9
Sept	23.2	7.5	15.3
Oct	23.9	9.9	17.0
Nov	24	11.8	17.9
Dec	25.3	13.1	19.2

9.3.2 PRECIPITATION AND EVAPORATION

Thunderstorms occur often during the summer (rainy season), usually accompanied by lightning, heavy rain, strong winds and occasionally hail. Storms are localized and rainfall can vary markedly over short distances.

Rainfall for the site is based on 90 years of record obtained from the Water Resources of South Africa Report 2012 (WR2012) (WRC, 2015). The WR2012 historical records indicate a long-term average rainfall rate of approximately 688 mm per annum (see Figure 12). The month with the highest average values is that of January (117mm), with the lowest month being July (7mm). Evaporation data used for this site is based on the 1 541

mm per annum S-Pan evaporation and Evaporation Zone 4A (WRC, 2015). Evaporation is likely to be distributed as presented in Figure 12.

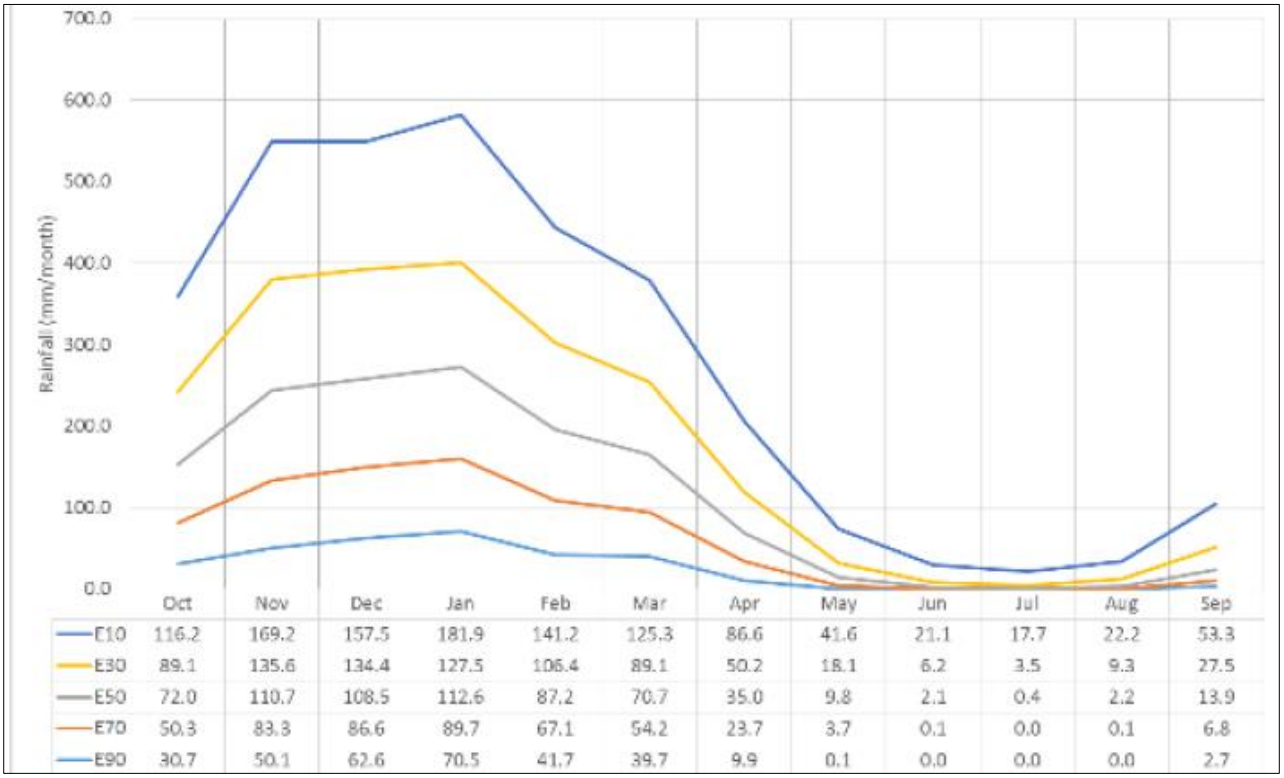

Figure 12: Monthly rainfall distribution at the 2 Seam Pty Ltd Mine (GCS, 2020)

9.3.3 MEAN MONTHLY WIND DIRECTION AND SPEED

The prevailing wind direction at Bethal throughout the year is from the north-west. The storm winds, however, usually blow from the south-east, with the strongest winds in the late winter and early spring.

Average wind speeds have not been recorded greater than 5.7 m/s with only about 8% to 12% of the monthly average frequency exceeding the 3.4 - 5.4 speed intervals. This increases to 15 - 25% during spring and early summer (August to December). Refer to Table 13.

Table 13: Mean monthly wind direction and speed

Month	N		NE		E		SE		S		SW		W		NW	
	n	v	n	v	n	v	n	v	n	v	n	v	n	v	n	v
Jan	67	4.3	124	4.0	119	4.5	92	5.1	40	4.6	47	4.3	45	3.8	149	3.8
Feb	48	4.1	108	3.8	139	4.1	135	4.9	61	4.5	48	3.9	41	3.5	91	3.7
March	53	3.9	99	3.7	126	3.7	99	4.5	50	4.1	56	4.1	43	3.5	111	3.9
Apr	50	4.0	88	3.5	94	4.0	55	4.2	45	4.3	71	4.4	71	4.5	129	4.0
May	54	4.4	66	3.7	61	3.9	62	4.5	47	4.2	79	4.5	67	4.7	116	4.1
Jun	48	4.1	47	3.7	59	4.1	42	4.8	46	4.7	99	4.5	76	4.3	115	4.3

Month	N		NE		E		SE		S		SW		W		NW	
	n	v	n	v	n	v	n	v	n	v	n	v	n	v	n	v
Jul	43	4.1	66	3.7	64	4.1	62	4.9	54	4.6	84	4.5	57	4.2	121	4.1
Aug	80	4.9	96	4.4	97	4.3	33	5.6	35	4.9	75	4.9	65	4.9	192	4.7
Sept	115	4.8	134	4.8	101	5.0	48	5.7	32	4.1	53	5.1	59	5.0	203	4.8
Oct	115	4.5	139	4.7	116	5.4	58	5.6	41	4.9	54	4.7	47	4.8	223	4.8
Nov	105	4.4	135	4.4	110	5.0	56	5.3	37	4.9	45	4.6	55	4.3	229	4.7
Dec	91	4.2	138	4.1	102	4.8	55	4.9	35	4.5	47	4.9	55	4.2	194	4.2
Average	72	4.4	103	4.1	98	4.4	66	4.9	44	4.5	64	4.5	57	4.4	156	4.4

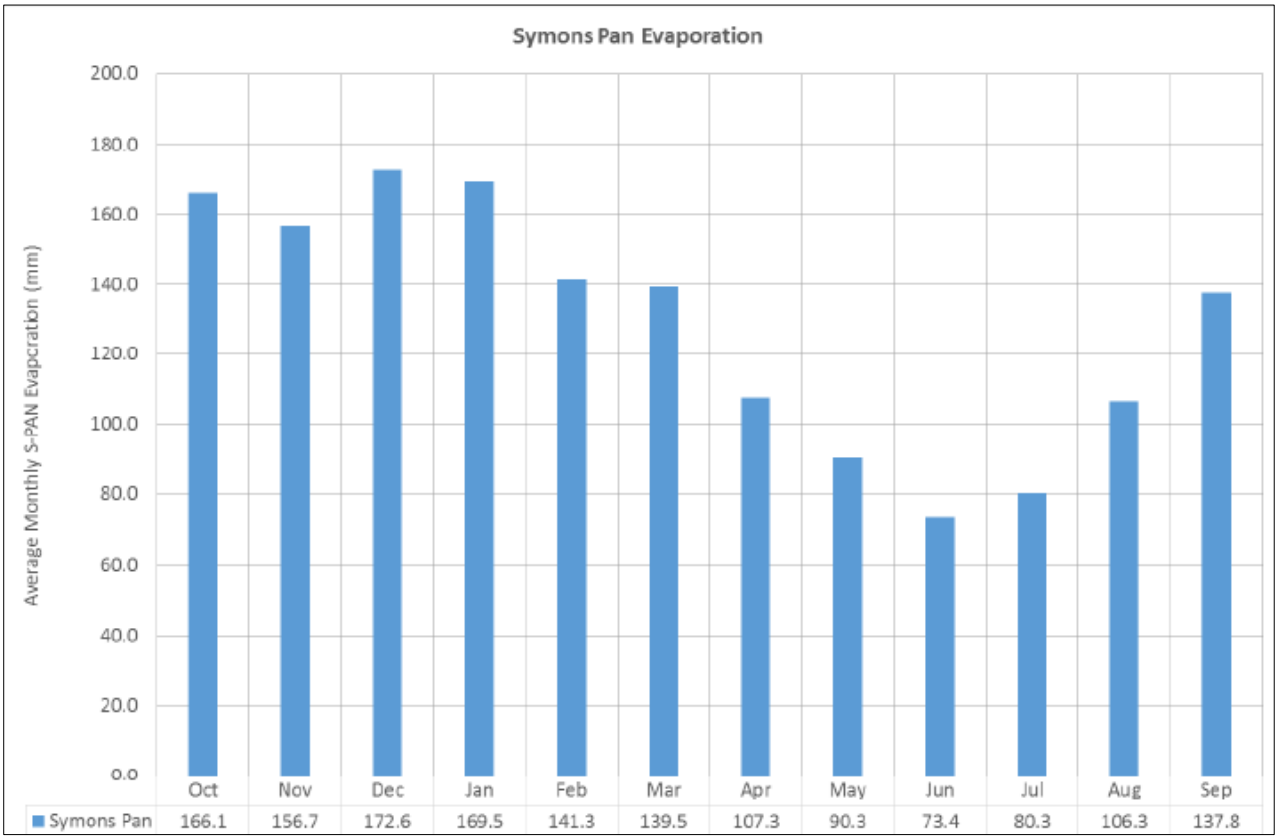

Figure 13: S-Pan Evaporation for 2 Seam Pty Ltd mine (WRC, 2015)

Based on data obtained by Eco Elementum (2019b) from the Witbank Weather Station at the Witbank Dam (closest weather station), the mean annual precipitation is reported as 702.7 mm per annum (refer to Table 14).

Table 14: Summary of Rainfall and S-Pan Evaporation Data (EcoElementum, 2019b)

Month [-]	Mean Annual Precipitation [mm]	Evaporation [mm]
January	131.5	164.5
February	91.8	138.4

March	73.8	129.8
April	39.3	97.4
May	13.4	79.8
June	7	65.3
July	2.9	72.5
August	7.9	98.8
September	20.7	137.3
October	78.3	163.7
November	123.8	158.5
December	116.7	163.6
Mean Annual Total (mm)	702.7	1476.2

9.4 SURFACE WATER

A surface water assessment study will be undertaken during the EIAR phase of the project. The results of this study will be included in the EIA report.

9.4.1 WATER MANAGEMENT AREA

The mine is located in Quaternary Catchment B11B, upper Olifants River Catchment within the Olifants Water Management Area. Refer to Figure 14.

9.4.2 SURFACE WATER HYDROLOGY

The tributary to the Olifants River flows on the north western boundary of the proposed opencast operations at Lourens 472 IS. The confluence of the tributary and the Olifants River is on RE of the farm Clydesdale 483 IS northeast of the mining area. The effective catchment in terms of surface runoff is approximately 490 km^2.

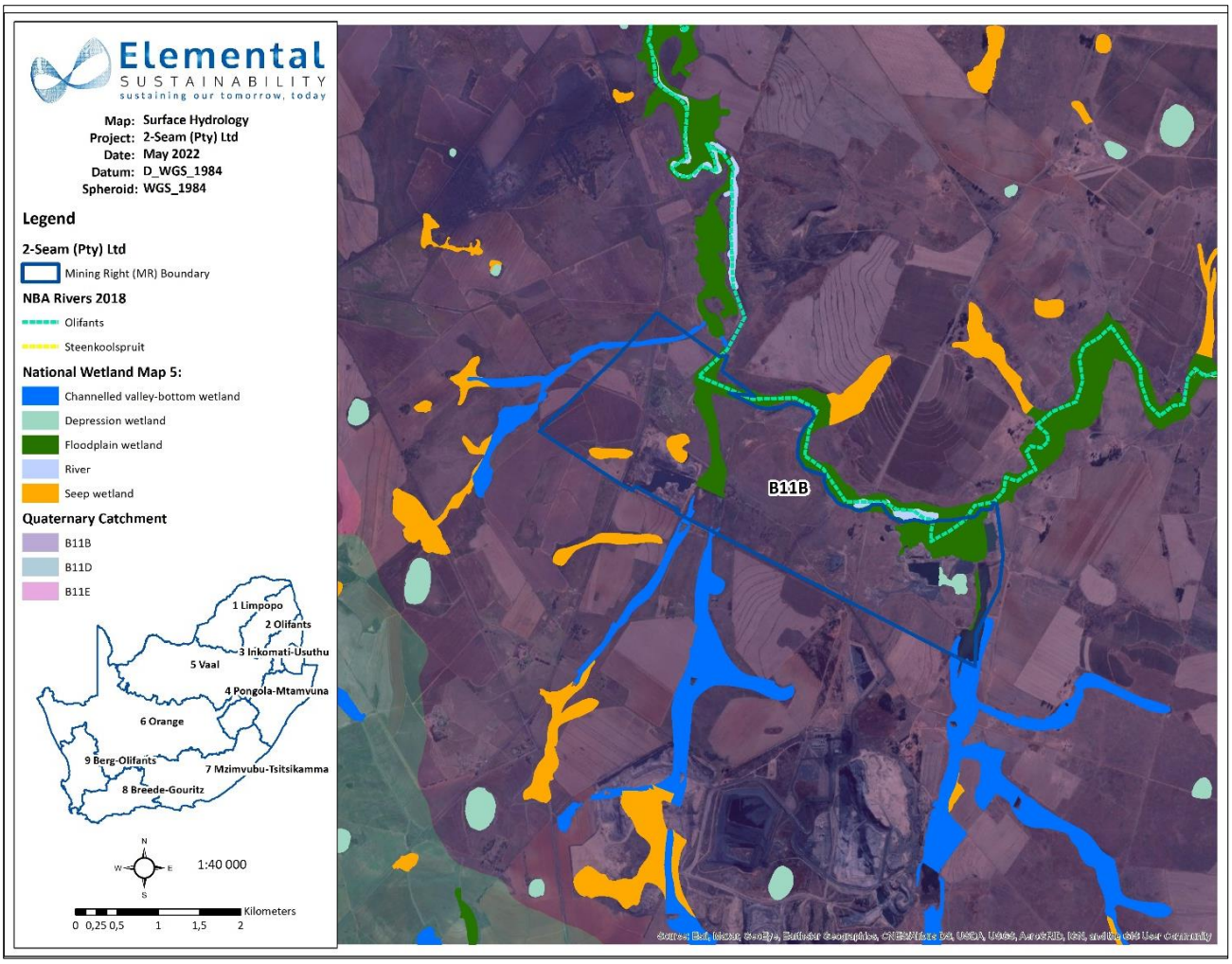

Figure 14: Surface Hydrology for 2 Seam Mine

9.4.3 MEAN ANNUAL RUNOFF

The Mean Annual Runoff (MAR) of the B11B catchment is 13.8 million m^3 per year based on average rainfall.

9.4.4 SURFACE WATER QUALITY

As 2 Seam is an existing mine, surface water monitoring is undertaken by Zyntha Consulting (Pty) Ltd. as per the WUL requirements. A copy of the last quarterly monitoring report is attached as Appendix X.

The current monitoring points are indicated in Figure 15. The surface water quality results for March 2022 are provided in Table 15 below.

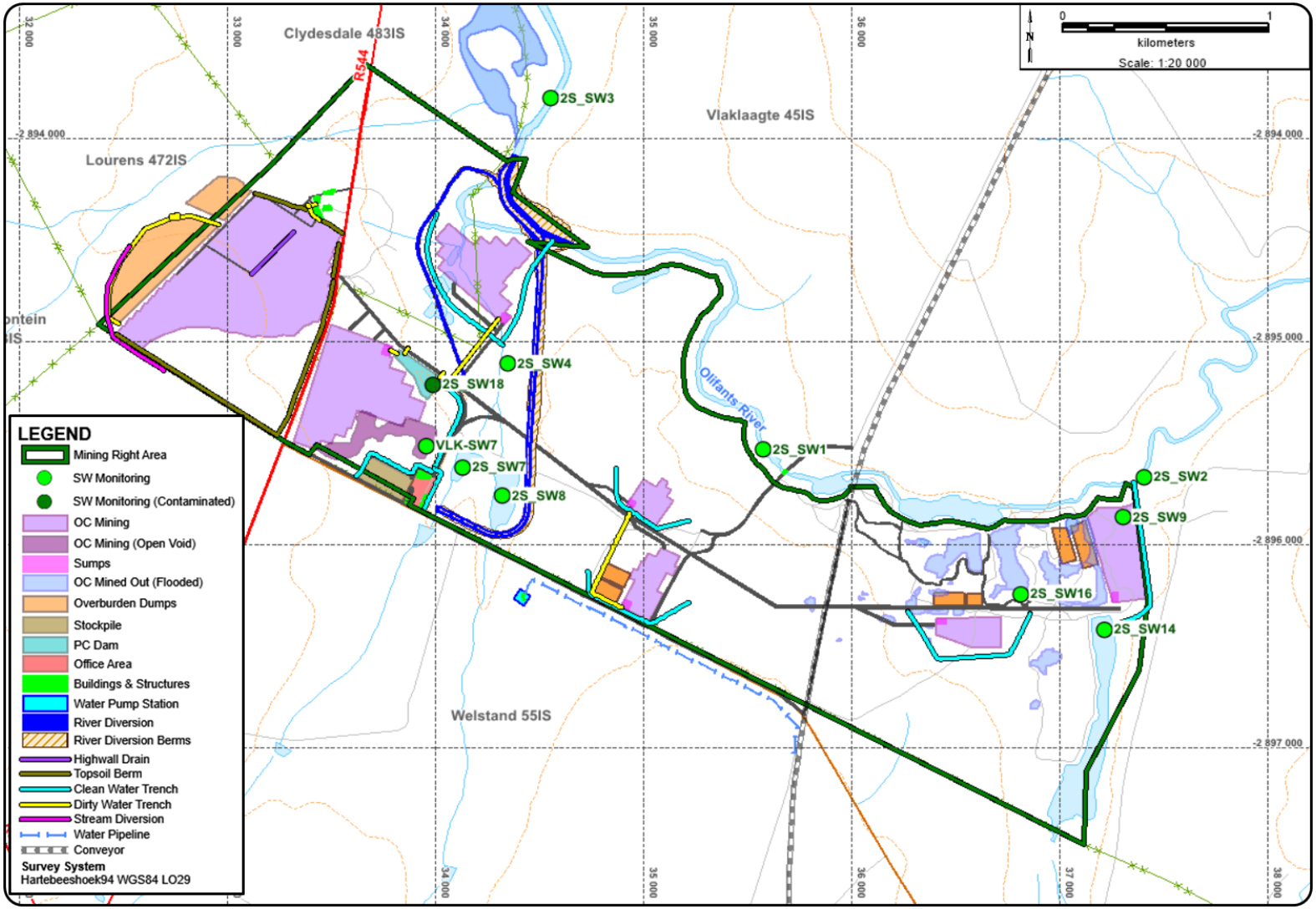

Figure 15: Surface water monitoring points

Table 15: Surface Water Quality Results for March 2022)

Sample Point	Sample Date	Parameters														
		pH	EC (mS/m)	TDS (mg/l)	Alk (mg/l)	N (mg/l)	Cl (mg/l)	SO_4 (mg/l)	F (mg/l)	Na (mg/l)	K (mg/l)	Ca (mg/l)	Mg (mg/l)	Al (mg/l)	Fe (mg/l)	Mn (mg/l)
	Non-Compliance	**<6,5**	**>90**	**>350**	**>120**	**>0,5**	**>40**	**>150**	**>0,75**	**>50**	**>25**	**>50**	**>30**	**>0,02**	**>0,3**	**>0,05**
2S_SW 1	Mar-22	7.86	76.00	530.00	191.00	0.10	16.80	242.00	0.76	31.70	6.19	67.80	42.60	0.03	0.04	0.02
2S_SW 2	Mar-22	7.87	53.30	420.00	140.00	0.10	18.80	126.00	0.79	27.00	4.85	46.20	23.80	0.10	0.08	0.01
2S_SW 3	Mar-22	7.88	71.80	638.00	177.00	0.10	16.90	218.00	0.76	30.20	5.95	62.00	39.40	0.06	0.06	0.20
2S_SW 4	Mar-22	7.44	149.00	1 394.00	151.00	0.10	18.80	724.00	0.46	45.40	16.30	160.00	93.70	0.04	0.05	6.10
2S_SW 7	Mar-22	5.60	34.20	294.00	66.00	0.10	5.98	155.00	0.84	9.89	7.60	29.70	12.90	0.23	4.72	2.05
2S_SW 8	Mar-22	7.40	29.30	194.00	132.00	0.10	1.00	30.60	0.44	9.68	1.78	28.20	13.20	0.02	0.02	0.01
2S_SW 9	Mar-22	7.68	37.30	248.00	134.00	0.10	16.10	42.00	0.82	20.80	3.97	26.40	15.70	0.13	0.21	0.01
2S_SW 14	Mar-22	7.93	34.20	234.00	123.00	0.10	12.80	42.70	0.65	17.70	3.52	26.30	13.60	0.09	0.14	0.01
2S_SW 16	Mar-22	8.24	93.40	864.00	160.00	0.10	16.60	360.00	0.76	38.20	7.78	68.60	58.20	0.04	0.06	0.01
2S_SW 18	Mar-22	7.92	259.00	2 574.00	198.00	24.40	23.20	1 328.00	1.28	138.00	13.60	225.00	172.00	0.05	0.05	0.01
VLK SW 7	Mar-22	6.90	19.20	158.00	60.00	0.10	18.50	9.97	0.64	15.80	9.08	9.17	4.42	0.07	0.51	0.13

9.4.5 RESOURCES CLASS AND RIVER HEALTH RECEIVING WATER QUALITY OBJECTIVES AND RESERVE

The DWS published the Resource Quality Classes for the Olifants River Management Area in April 2016 (GNR 547 in terms of the NWA). The resource class and ecological category applicable to the 2 Seam Mine are indicated in Table *16*.

Table 16: Water Resource Classes per IUA and Ecological Categories per Biophysical Node

Integrated Unit of Analysis (IUA)	Water Resource Class for IUA	Biophysical Node Name	Quaternary Catchment	River Name	Ecological Category to be maintained	Natural MAR (million m^3/a)	EWR as % of natural MAR
Upper Olifants River catchment	III	HN1	B11A, B11B	Olifants (confluence with Steenkoolspruit)	C	61.3	10.25

9.5 WETLANDS

A 2016 and updated 2020 wetland assessment undertaken by Galago Environmental Aquatic and Biodiversity Specialists identified various aquatic systems, including a seepage wetland, channelled valley-bottom wetland, unchanneled valley bottom wetlands, riparian area and artificial impoundments.

Most of the study area has been impacted by historical and current mining activities. A large mine tailings area is located in the middle of the site. The Olifants River forms the northern boundary of the study site, with a road and coal conveyor crossing the system. The western section of the study site is classified as an artificial impoundment. The impoundments were created as part of old mining operations. The study site has been highly altered by anthropogenic activities.

The list of impacts to the aquatic ecosystems on the study site and adjacent areas follows:

- Old mining, both underground and opencast,
- Agricultural use, including cultivation and grazing by cattle,
- Alien vegetation establishment and expansion,
- Road crossing of the system,
- Frequency of fire events.

The wetland impact assessment will be updated during the EIAR phase of the project.

9.6 HYDROGEOLOGY

A hydrogeological study will be undertaken by GCS The results of the study are discussed below. The hydrogeological assessment will be updated to include the opencast mining area, the tailings facility and the coal wash plant. The results will be included in the EIAR.

9.6.1 AQUIFER CLASSIFICATION

9.6.1.1 AQUIFER VULNERABILITY

Eco Elementum (2019) evaluated the groundwater vulnerability of the 2 Seam mining area by assessing the Aquifer Vulnerability Map of South Africa (DWA, 2013) and conducting a Groundwater Vulnerability Assessment. Based on the Aquifer Vulnerability map the mine is located in a “least” to “moderate” vulnerability rating area. A vulnerability rating of 7 was determined for the area, indicative of medium vulnerability but based on TDS concentrations in some area, the aquifer may be highly vulnerable.

9.6.1.2 AQUIFER CLASSIFICATION

Based on the Aquifer Classification Map of South Africa (DWA, 2012), the aquifer at the 2 Seam Mine is considered a minor aquifer system, i.e. fractured or potentially fractured rocks, variable water quality, moderately-yielding but important for local water supply and baseflow contribution to rivers.

9.6.1.3 AQUIFER PROTECTION CLASSIFICATION

Eco Elementum (2019) combined the Aquifer System Management Classification and the Vulnerability Classification Rating to determine the Groundwater Quality Management (GQM) Classification, which provides the level of aquifer protection. The GQM Index for 2 Seam is 4, which indicates a medium level of protection. Based on the Aquifer Susceptibility Map of South Africa (DWA, 2013), the mining area is classified as having a low to medium susceptibility to contamination. It is, therefore, essential that a monitoring protocol is in place and followed at the mine.

9.6.2 GROUNDWATER LEVELS

Groundwater levels were sourced from several projects in the vicinity of the Project site during the 2016 study. Groundwater levels at the Project site indicate groundwater levels in the range of 1.3 mbgl and 20.3 mbgl, with an average of ~10 mbgl.

9.6.3 GROUNDWATER QUALITY

Zyntha Consulting (Pty) Ltd. undertakes groundwater monitoring on site. The groundwater monitoring points are indicated in Figure 16.

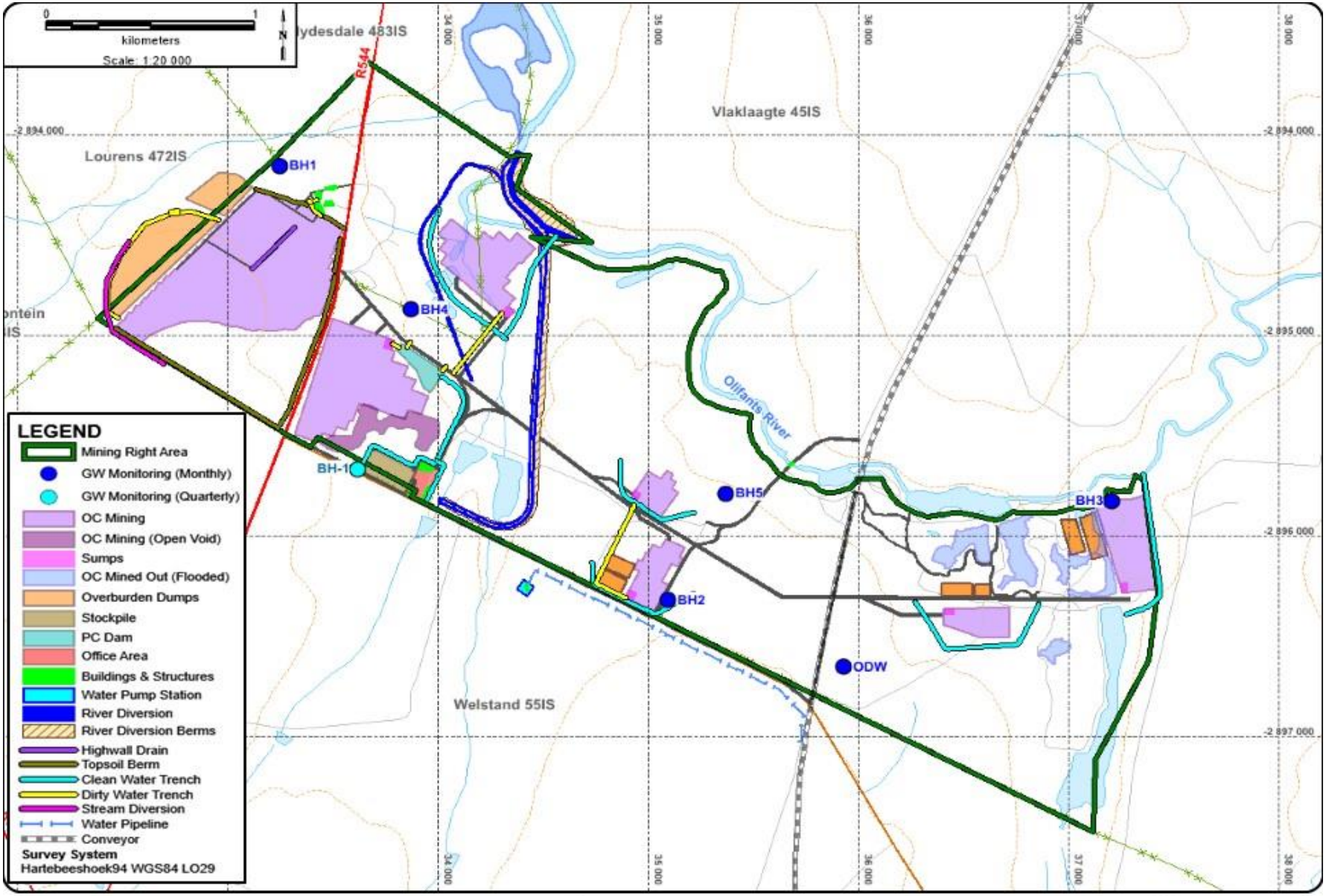

Figure 16: Groundwater monitoring points for March 2022

Table 17: Groundwater Monitoring results for March 2022

Monitoring Point	Sample Date	Parameters														
		pH	EC (mS/m)	TDS (mg/l)	Alk (mg/l)	N (mg/l)	Cl (mg/l)	SO_4 (mg/l)	F (mg/l)	Na (mg/l)	K (mg/l)	Ca (mg/l)	Mg (mg/l)	Al (mg/l)	Fe (mg/l)	Mn (mg/l)
	Non-Compliance	**<5**	**>170**	**>1 200**	**>300**	**>11**	**>300**	**>250**	**>1,5**	**>200**	**>50**	**>32**	**>30**	**>0,3**	**>0,3**	**>0,1**
BH1	Mar-22	7.94	19.40	128.00	60.00	0.10	25.20	2.00	0.67	20.60	4.56	6.28	3.52	0.03	0.01	0.01
BH4	Mar-22	7.29	11.10	56.00	36.00	0.29	9.34	3.69	0.20	10.80	2.19	3.81	2.42	0.07	0.09	0.06
BH5	Mar-22	6.55	306.00	2 932.00	45.00	49.80	101.00	1 520.00	0.20	230.00	14.10	184.00	213.00	0.05	0.06	0.28
Office Water Analysis	Mar-22	6.63	5.50	38.00	9.00	0.10	1.79	14.80	0.20	4.43	0.27	2.73	1.47	0.03	0.04	0.01

9.6.4 POTENTIAL POLLUTION SOURCE IDENTIFICATION

The following may represent sources of ground water pollution:

- Proposed Tailings Facility; and
- ROM stockpile.

9.7 WATER AUTHORITY

The Department of Water and Sanitation (DWS) with the regional office based in Bronkhorstspruit is the commenting authority for this area.

9.8 FLORA (PLANT LIFE)

An Ecological Study (including the flora, fauna, avifauna, amphibians) will be undertaken for the proposed project. The findings and recommendation of this study will be included in the EIAr and EMPr. The information for the below sections was taken from the existing EIAR.

9.8.1 REGIONAL VEGETATION

The 2 Seam Mine lies in the quarter degree square 2629AB (Vandyksdrif). Mucina & Rutherford (2006) classified the area as Eastern Highveld Grassland, comprising slightly to moderately undulating plains, including some low hills and pan depressions. The vegetation is short, dense grassland dominated by the usual Highveld grass composition with small scattered rocky outcrops with wiry, sour grasses, and some woody species. Refer to Figure 17 below.

The soils are red to yellow sandy soils found on shales and sandstones of the Madzaringwe Formation. This vegetation unit has a strongly seasonal summer rainfall with very dry winters. Incidence of frost is expected from 13 to 42 days but higher at high elevations.

This vegetation unit is considered endangered. Its conservation target is 24%. Only a very small fraction is conserved in statutory reserves (Nooitgedacht Dam and Jericho Dam Nature Reserves) and a few private nature reserves (Holkranse, Kransbank and Morgenstond). About 40% of the unit is already transformed by cultivation, plantations, mines, urbanization and dam building. The Eastern Highveld Grassland vegetation unit is considered a Protected Ecosystem in accordance with the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).

A 2016 study of the flora by Galago Environmental Biodiversity and Aquatic Specialists, indicated that the vegetation study units identified on the mining site includes:

- Wetland vegetation;
- Cultivated fields;
- *Eragrostis – Helichrysum* grassland;
- *Eragrostis – Digitaria* grassland; and

- Mixed vegetation of farming and mining areas.

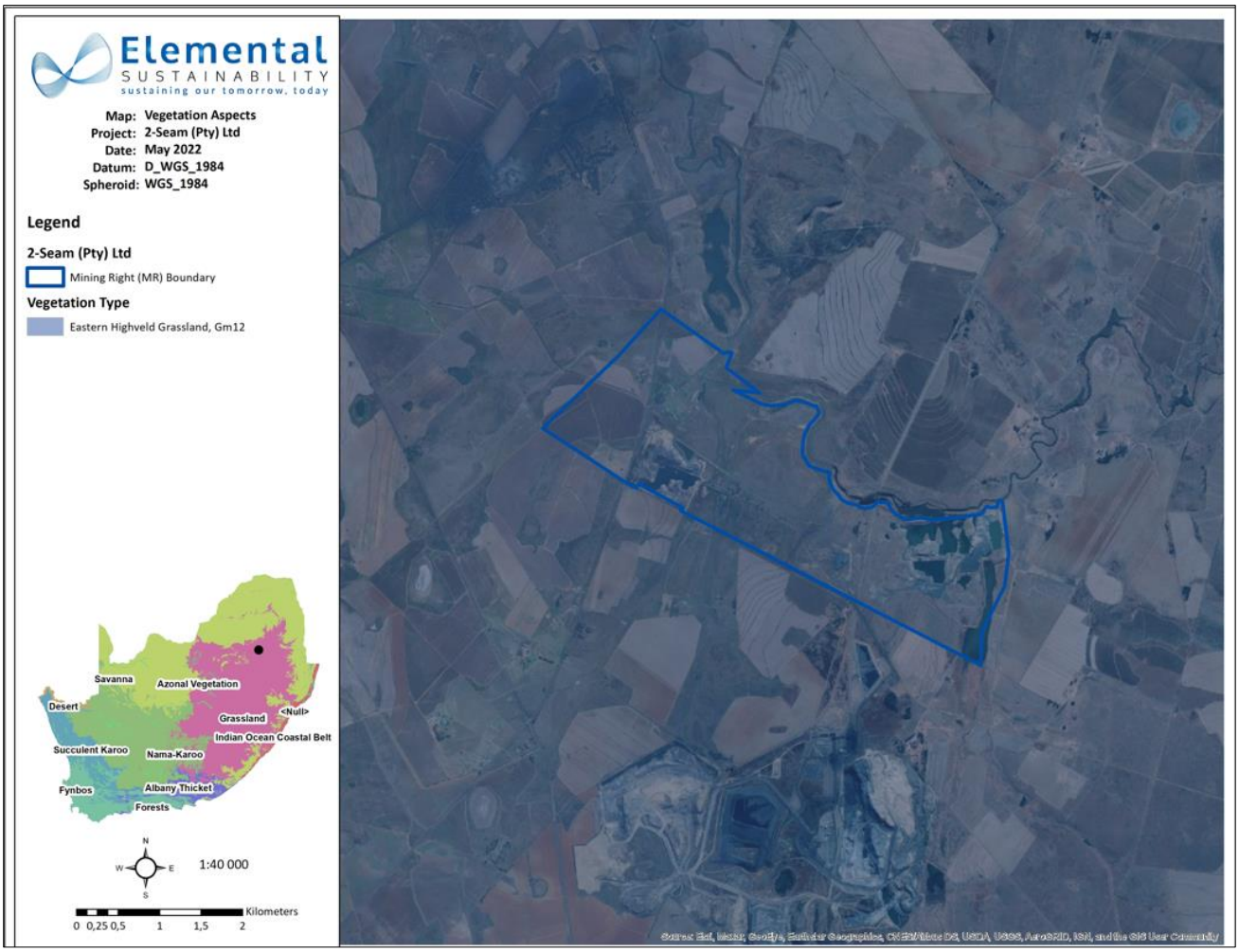

Figure 17: Vegetation group within the 2 Seam Mine

No threatened plant species are known to occur in the 2629AB q.d.s. (Species listed in the Red List of South African plants (2009) as Critically endangered, Endangered and Vulnerable are considered threatened species). An amaryllid species that is considered not threatened but of conservation concern in terms of the 2009 Red List and that has never been recorded in the 2629AB q.d.s was found on the study site (Annexure A). This plant has in the past been recorded in the three neighbouring quarter degree squares 2629 AC and AD and in 2529CD.

The Wetland vegetation study unit has suitable habitat for four Protected species in terms of the Mpumalanga Nature Conservation Act, 1998 (Act No. 10 of 1998), but only Crinum bulbispermum and Crinum graminicola were found during the 2016 survey.

9.8.2 EASTERN HIGHVELD GRASSLAND

Distribution Mpumalanga and Gauteng Provinces: Plains between Belfast in the east and the eastern side of Johannesburg in the west and extending southwards to Bethal, Ermelo and west of Piet Retief. Altitude 1 520–1 780 m, but also as low as 1 300 m.

Vegetation & Landscape Features Slightly to moderately undulating plains, including some low hills and pan depressions. The vegetation is short dense grassland dominated by the usual highveld grass composition (*Aristida*, *Digitaria*, *Eragrostis*, *Themeda*, *Tristachya* etc.) with small, scattered rocky outcrops with wiry, sour grasses and some woody species (*Acacia caffra*, *Celtis africana*, *Diospyros lycioides* subsp *lycioides*, *Parinari capensis*, *Protea caffra*, *P. welwitschii* and *Rhus magalismontanum*).

Geology & Soils Red to yellow sandy soils of the Ba and Bb land types found on shales and sandstones of the Madzaringwe Formation (Karoo Supergroup). Land types Bb (65%) and Ba (30%).

Climate Strongly seasonal summer rainfall, with very dry winters. MAP 650–900 mm (overall average: 726 mm), MAP relatively uniform across most of this unit, but increases significantly in the extreme southeast. The coefficient of variation in MAP is 25% across most of the unit, but drops to 21% in the east and southeast. Incidence of frost from 13–42 days, but higher at higher elevations.

Important Taxa Graminoids: *Aristida aequiglumis* (d), *A. congesta* (d), *A. junciformis* subsp. *galpinii* (d), *Brachiaria serrata* (d), *Cynodon dactylon* (d), *Digitaria monodactyla* (d), *D. tricholaenoides* (d), *Elionurus muticus* (d), *Eragrostis chloromelas* (d), *E. curvula* (d), *E. plana* (d), *E. racemosa* (d), *E. sclerantha* (d), *Heteropogon contortus* (d), *Loudetia simplex* (d), *Microchloa caffra* (d), *Monocymbium ceresiiforme* (d), *Setaria sphacelata* (d), *Sporobolus africanus* (d), *S. pectinatus* (d), *Themeda triandra* (d), *Trachypogon spicatus* (d), *Tristachya leucothrix* (d), *T. rehmannii* (d), *Alloteropsis semialata* subsp. *eckloniana*, *Andropogon appendiculatus*, *A. schirensis*, *Bewsia biflora*, *Ctenium concinnum*, *Diheteropogon amplectens*, *Eragrostis capensis*, *E. gummiflua*, *E. patentissima*, *Harpochloa falx*, *Panicum natalense*, *Rendlia altera*, *Schizachyrium sanguineum*, *Setaria nigrirostris*, *Urelytrum agropyroides*. Herbs: *Berkheya setifera* (d), *Haplocarpha scaposa* (d), *Justicia anagalloides* (d), *Pelargonium luridum* (d), *Acalypha angustata*, *Chamaecrista mimosoides*, *Dicoma anomala*, *Euryops gilfillanii, E. transvaalensis* subsp. *setilobus, Helichrysum aureonitens*, *H. caespititium*, *H. callicomum*, *H. oreophilum*, *H. rugulosum*, *Ipomoea crassipes*, *Pentanisia prunelloides* subsp. *latifolia*, *Selago densiflora*, *Senecio coronatus*, *Vernonia oligocephala*, *Wahlenbergia undulata*. Geophytic Herbs: *Gladiolus crassifolius*, *Haemanthus humilis* subsp. *hirsutus*, *Hypoxis rigidula* var. *pilosissima*, *Ledebouria ovatifolia*. Succulent Herb: *Aloe ecklonis*. Low Shrubs: *Anthospermum rigidum* subsp. *pumilum*, *Stoebe plumosa*.

Conservation Endangered. Target 24%. Only very small fraction conserved in statutory reserves (Nooitgedacht Dam and Jericho Dam Nature Reserves) and in private reserves (Holkranse, Kransbank, Morgenstond). Some 44% transformed primarily by cultivation, plantations, mines, urbanisation and by building of dams. Cultivation may have had a more extensive impact, indicated by land-cover data. No serious alien invasions are reported, but *Acacia mearnsii* can become dominant in disturbed sites. Erosion is very low.

9.8.3 REGIONALCONSERVATION AREAS

The 2 Seam Mine does not lie within close proximity to any protected areas (Figure 18). The Eastern Highveld Grassland is, however, considered to be a Protected Ecosystem.

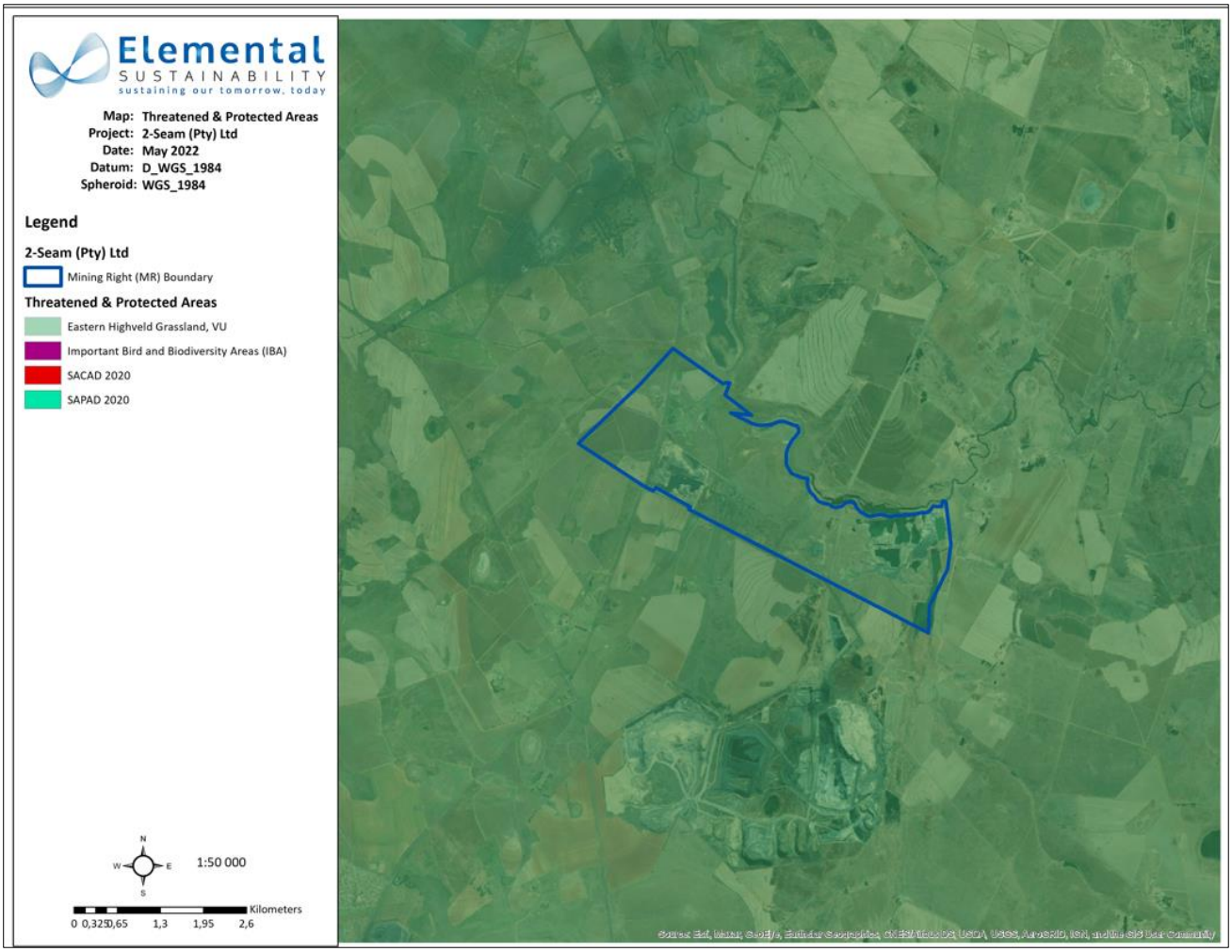

Figure 18: Protected areas located around the proposed opencast mine

The Mpumalanga Conservation Plan provides classification of the Terrestrial Biodiversity into various classification categories:

- Protected areas - already protected and managed for conservation;
- Irreplaceable areas - no other options available to meet targets—protection crucial;
- Highly Significant areas - protection needed, very limited choice for meeting targets;
- Important and Necessary areas - protection needed, greater choice in meeting targets;
- Ecological Corridors – mixed natural and transformed areas, identified for long term connectivity and biological movement;
- Areas of Least Concern – natural areas with most choices, including for development; and
- Areas with No Natural Habitat Remaining – transformed areas that make no contribution to meeting targets.

As indicated in Figure 19, a small portion of the 2 Seam Mine is classified as CBA optimal and other natural areas occur within the mining right boundary. However, large sections within the project boundary have been heavily or moderately modified.

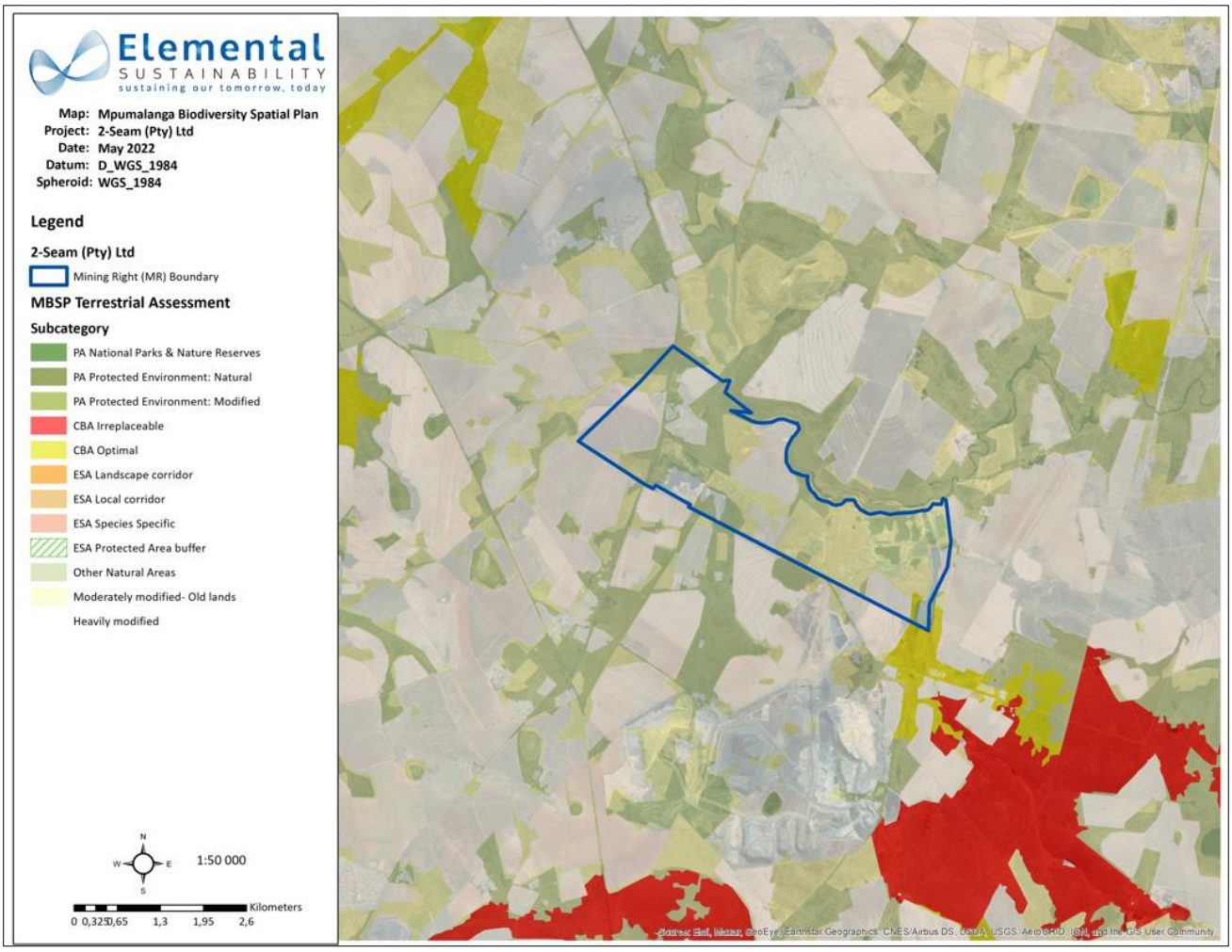

Figure 19: Mpumalanga Biodiversity Sector Plan

9.9 FAUNA

Of the 210 avifaunal species recorded for the 2629AB q.d.g.c. during the SABAP1 period (Harrison et al. 1997) and the current SABAP2 period, 201 (96 %) are likely to occur on the study site and 98 (49 %) of these avifaunal species were actually observed within the study area during the time of the survey in 2016. So far, 185 avifaunal species were recorded for the q.d.g.c. during the current SABAP2 project to date compared with 160 species recorded during the SABAP1 period.

The avifaunal biodiversity index (ABI) indicates that the largest avifaunal species diversity is likely to occur within the aquatic habitat vegetation habitat system, with an avifaunal biodiversity index (ABI) of 556, followed by the open grassland or open space area (ABI 333) and the disturbed and transformed areas (ABI 314).

Most of the Red Data avifaunal species that are likely to occur in the study area are only likely to move through the area on rare occasions due to the fragmented state and surrounding disturbed areas. Some of the habitat systems, however, offer suitable habitat for Red Data avifaunal species during optimal conditions. Most of the

aquatic habitat with their buffers, as delineated by an aquatic specialist, should be regarded as highly sensitive and should be kept free from any development or any form of disturbance. Natural grassland along these wetland systems should also be regarded as sensitive to offer suitable foraging habitat for aquatic Red Data avifaunal species. Not only are these areas sensitive for Red Data avifaunal species but also for all other avifaunal species that occur or are likely to occur within the area.

Of the 37 reptile species which may occur on the 2 Seam Mine area, one was confirmed during the site visit in 2016. Of the 16 amphibian species which may possibly occur on the study site two were confirmed during the site visit

9.10 AGRICULTURAL AND LAND CAPABILITY

Rehab Green conducted a Soil, Land Capability, Land Use and hydropedology Assessment in 2016. An updated study will be undertaken for the proposed project.

9.11 SOIL TYPES

Soil types within the proposed mining area were mapped based on soil information gathered by means of auger observations at a grid density of 150 x 150 meters. A total of 41 auger observations were made at pre-determined grid points in order to locate and accurately map soil boundaries.

A total of 5 homogeneous soil units (soil types), based on dominant soil form, effective soil depth, internal drainage, terrain unit and slope percentage were identified during field observations and were symbolised as Hu1, Hu2, Av1, Av2 and Lo1.

9.11.1 SOIL FERTILITY AND ERODIBILIITY

The soils that are present have a low erodibility in its natural state, but will easily erode when put onto a slope. The soils of the Arcadia form have a high fertility due to the high cation exchange capacity (140 cmol/kg clay) and high clay content.

9.11.2 SOIL DEPTH

Soil depth is fairly consistent and consists of about 0.8 m black vertisolic clay, which overlies 15.0 m of weathered pyroxinite.

9.11.3 LAND CAPABILITY

Land capability is determined by a combination of soil, terrain and climate features. The dominant land capability classes in the project area are Class II (Intensive cultivation) and Class IV (Moderate cultivation), as depicted in Figure 20. The ensuing paragraphs list in detail the limitations used to define the two classes.

9.11.4 CLASS II: ARABLE

Class II land capability coincides with the Hutton and Clovelly soils. These soils are well drained, easily managed and have high agricultural potential. Land in Class II has some limitations that reduce the choice of plants or require moderate conservation practices. It may be used for cultivated crops, but with less latitude in the choice of crops or management practices than Class I. The limitations are few and the practices are easy to apply. Limitations may include, singly or in combination, the effects of:

- Gentle slopes;
- Moderate susceptibility to wind and water erosion;
- Less than ideal soil depth;
- Somewhat unfavourable soil structure and workability;
- Slight to moderate salinity or sodicity easily corrected but likely to recur;
- Occasional damaging flooding;
- Wetness correctable by drainage but existing permanently as a moderate limitation; and
- Slight climatic limitations on soil use and management.

Limitations may cause special soil-conserving cropping systems, soil conservation practices, water-control devices or tillage methods to be required when used for cultivated crops.

9.11.5 CLASS IV: MEDIUM POTENTIAL

Land in Class IV has very severe permanent limitations that greatly restrict the choice of alternative uses and the potential for crop production; require very careful management; it may be used for cultivated crops, but more careful management is required than for Class III and conservation practices are more difficult to apply and maintain; restrictions to land use are greater than those in Class III and the choice of plants is more limited.

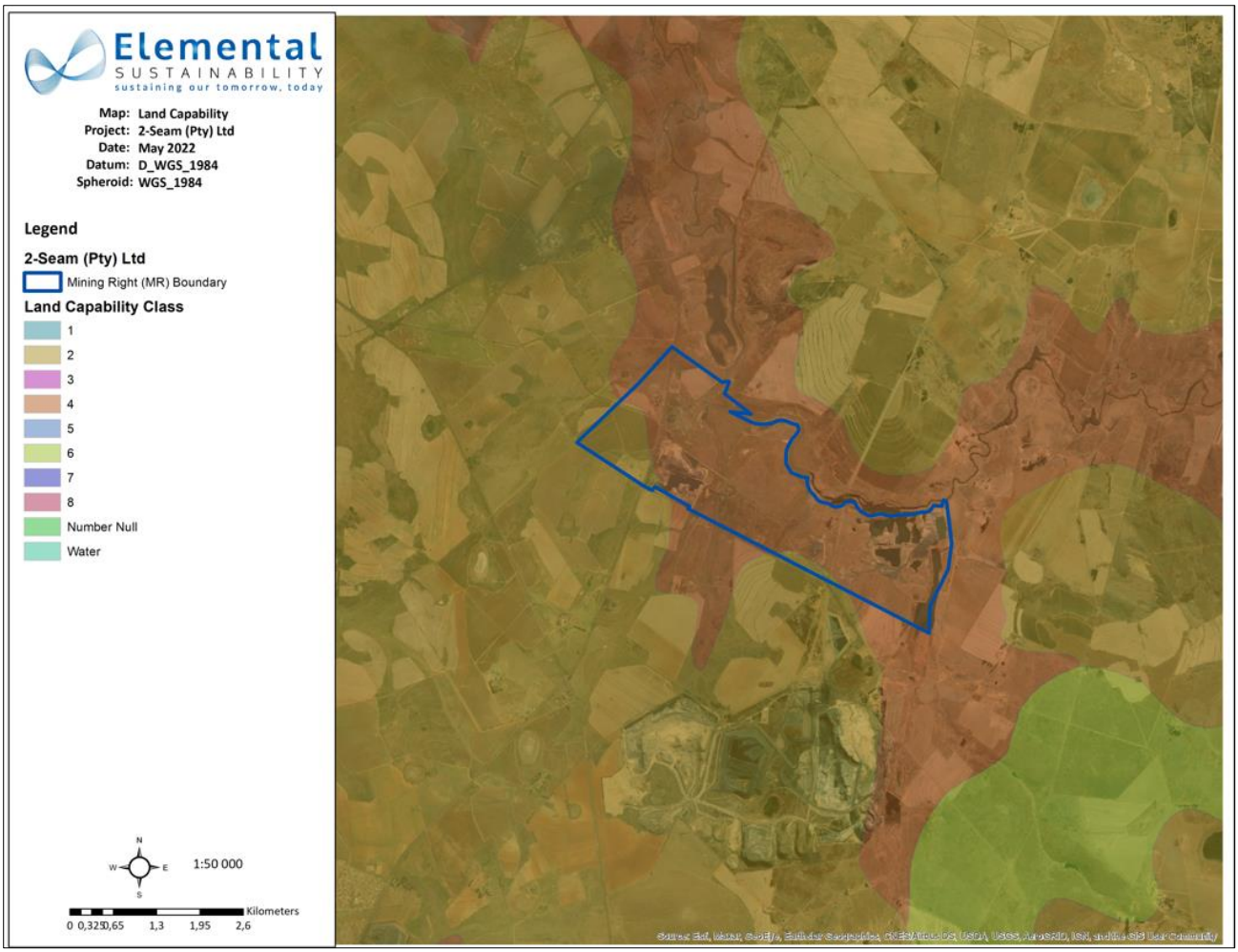

Figure 20: Land capability of 2 Seam mine area

Figure 21 indicates the land use within and around the 2 Seam Mine. A large section of the mine has been previously mined, while various wetlands (natural) and man made occur within and adjacent the mining right boundary.

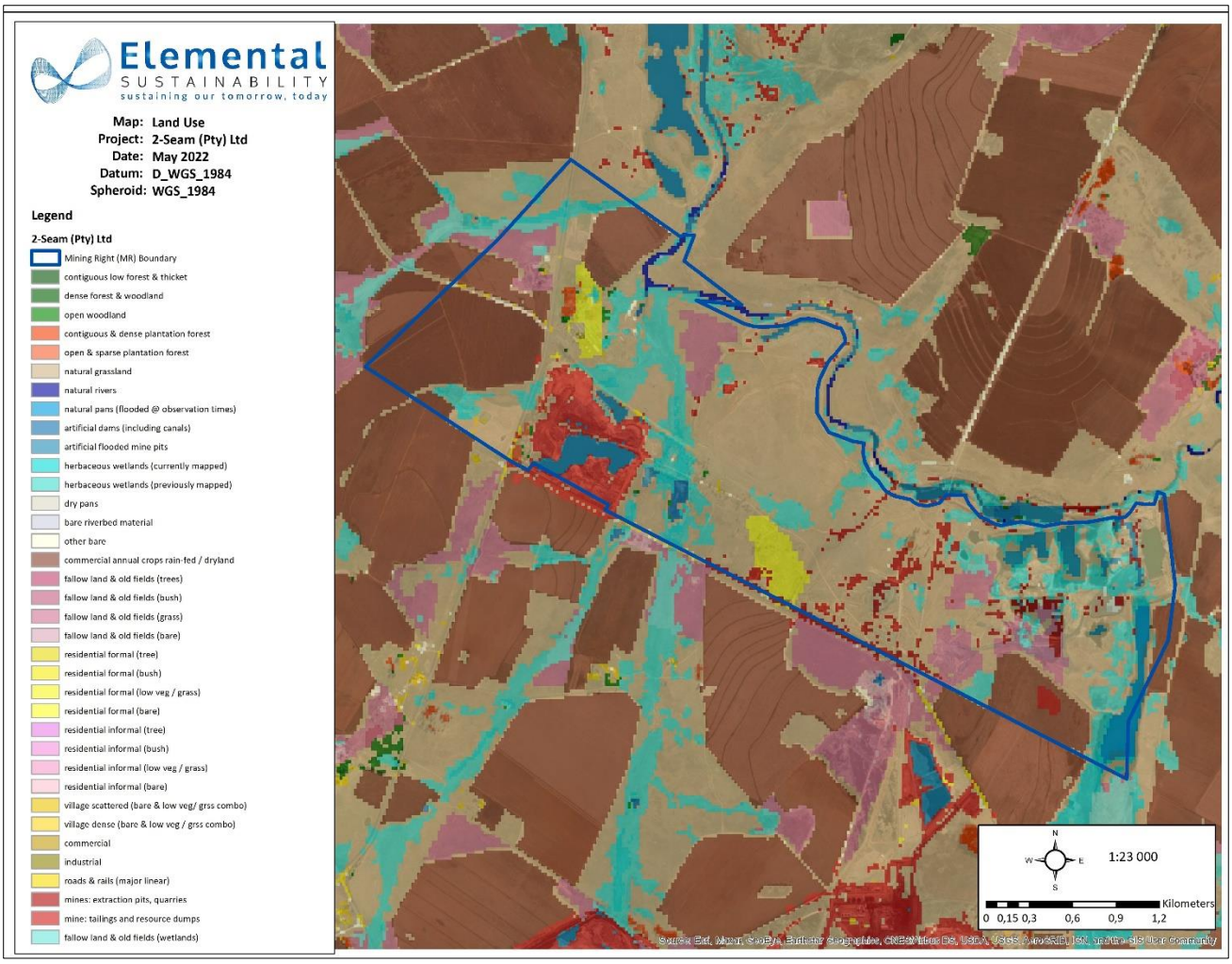

Figure 21: Land use within and around the project area

9.12 AIR QUALITY

Mining operations such as drilling, blasting, hauling, and transportation are major sources of emissions and air pollution. Emissions of particulate matter and nuisance dust will result from mineral plant operations such as crushing, screening and processing for final transportation. Fugitive emissions are also possible from roads and open stockpiles.

Nuisance dust can reduce visibility; soil or damage buildings and other materials; and increase costs due to the need for washing, cleaning and repainting. Plants can be affected by dust fallout through reduced light transmission which affects photosynthesis and can result in decreased growth. Fallout dust can also collect in watercourse causing sedimentation and a reduction in the water quality, and can also affect aquatic life through the smothering of riverine habitat and fish gill clogging. Coarse dust particles are produced during mining operations which can lead to an increase in fallout dust.

Potential sources of pollutants which may be of importance in terms of impact potentials include:

- Existing surrounding mines;

- Cultivation of agricultural for annual crop production (economic);
- Coal mining on the eastern boundary of the project site;
- Fugitive emissions from industrial, mining commercial and miscellaneous operations (wind erosion of open areas, vehicle-movement of dust along paved and unpaved) roads; and
- Vehicle Exhaust emissions.

Dust fall-out at 2 Seam Mine is monitored on a monthly basis via dust buckets. Refer to Figure 22 for the March to April 2022 dust monitoring results.

ATT: Mr Jaco Kleynhans		Period: 9 March 2022 - 7 April 2022					
Quantity Analyzed: 6	LAB NO:-	Z 47	Z 48	Z 49	Z 50	Z 51	Z 52
LAB REF NO: ZYN / 47 - 52 / Z / 04 / 22							
SAMPLE DESCRIPTION		Vlak D 1	Vlak D 2	Vlak D 4	Vlak D 5	Vlak D 6	Vlak D 7
CO-ORDINATES SOUTH		*26°10'03.4*	*26°10'18.9*	*26°09'24.2*	*26°10'5.61"*	*26°10'15.2"*	*26°11'7.28"*
CO-ORDINATES EAST		*29°21'31.7*	*29°21'10,5*	*29°20'10.3*	*29°20'0.70"*	*29°22'14.6"*	*29°22'15.22"*
Date Sampling Commenced		9-Mar-22	9-Mar-22	9-Mar-22	9-Mar-22	9-Mar-22	9-Mar-22
Date Samples Collected:		7-Apr-22	7-Apr-22	7-Apr-22	7-Apr-22	7-Apr-22	7-Apr-22
Date Samples Reported:		12-Apr-22	12-Apr-22	12-Apr-22	12-Apr-22	12-Apr-22	12-Apr-22
Date Analysed:		11-Apr-22	11-Apr-22	11-Apr-22	11-Apr-22	11-Apr-22	11-Apr-22
Time:		12:35	10:16	13:30	12:54	12:05	12:20
Mass Collected	mg	122	336	117	1293	Contaminated (Algae)	60.9
Sampling Period	days	29	29	29	29		29
Settleable Particulates (LPM 42) mg/m2/day		185	510	178	1964		92.5
Classification (Dept Env. & Tourism)		Residential area	Action	Residential area	Alert		Residential area
Restriction Areas		Residential area	Residential area	Residential area	Action		Residential area

SANS 1929:2011 Ambient Air Quality Limits for Dust Deposition

CLASSIFICATION	
Residential	Less than 600 mg/m2/day, 30 day average
Non Residential area	600 to 1200 mg/m2/day, 30 day average
Action	1200 to 2400 mg/m2/day, 30 day average
Alert	Greater than 2400 mg/m2/day, 30 day average

Method Based on ASTM D1739:1970 Air Quality Act NO. 39 of 2004

Restriction Areas	Dustfall rate (mg/m2/day, 30 - days average)	Permitted frequency of exceeding dust fall rate
Residential	<600 mg/m2/day	Two within a year, not sequential months.
Non Residential area	600 to 1200 mg/m2/day	Two within a year, not sequential months.

Figure 22: Dust Monitoring Results March to April 2022

9.13 NOISE

Mining and mining activities often emit significant noise levels which can become a nuisance or health risk when not properly managed. Not only to the mining area, but also to the surrounding land users and occupiers. The most sensitive receptors identified for the project area is the surrounding communities including land users, mine workers, mining communities and permanent farm homesteads and settlements. The region is predominantly occupied by mining and agricultural land uses.

The main noise generation activities of the proposed development during all phases are:

- Construction phase:
  - Excavations;
  - Transportation of materials; and
  - Construction of water handling infrastructure.
- Operation phase:
  - Transportation of materials; and

  - Offloading of materials.
- Closure or care and maintenance phase:
  - Limited number of vehicles moving around the site.

Noise generation can therefore be expected on the proposed site due to various activities and actions as indicated above. Noise levels may possibly exceed allowed limits for noise as indicated in SANS 10103: 2008. It is, however, important to implement a noise monitoring programme to monitor noise levels and implement mitigation measures should the set limits be exceeded.

9.14 VISUAL

It is important to bear in mind that determining a visual resource in absolute terms is not achievable. Evaluating a landscape's visual quality is both complex and challenging, as many quality standards apply and it is largely subjective, with individuals basing evaluations on experiences, their social level and their cultural background. Furthermore, natural features are inherently variable. Climate, season, atmospheric conditions, region and subregion all affect the attributes that comprise the landscape. The main sources of visual impacts in the wider area are mining and agricultural activities.

Visual Absorption Capacity (VAC) can be described as the ability of an area to absorb physical modifications. Factors affecting VAC include inter alia, vegetation, the built environment, existing infrastructure and topography. In terms of these factors the receiving environment is perceived to have a low to medium VAC. The following have been identified as sensitive receptors in terms of visual impacts and impacts on the 'Sense of Place' of the study area and surrounding area:

- Travelers on the R544 provincial road
- Surrounding land users within 2 km from the study area; and

However, as the mine is existing no further Visual impacts are expected.

9.15 ARCHAEOLOGY AND HERITAGE

It is anticipated that the following cultural and historical sites and resources could exist on site:

- Burial sites and graves;
- Farmsteads; and
- Old structures such as dams, etc.

As part of the environmental authorisation process, a heritage study will be undertaken to identify all heritage features. This will be discussed in full the EIAr/EMPr. A Paleontological assessment will also be included in the EIAr/EMPr.

9.16 SOCIO-ECONOMIC ENVIRONMENT

The 2 Seam Mine falls within the Nkangala District Municipality and the eMalahleni Local Municipality.

9.16.1 NKANGALA DISTRICT MUNICIPALITY

The Nkangala District Municipality is a Category C municipality in the Mpumalanga Province. It is the smallest district of the three in the province, making up 22% of its geographical area. It is comprised of six local municipalities: Victor Khanye, Emalahleni, Steve Tshwete, Emakhazeni, Thembisile Hani, and Dr JS Moroka. The district's headquarters are located in Middelburg.Nkangala is at the economic hub of Mpumalanga and is rich in minerals and natural resources. A strength of the district is the Maputo Corridor, which brings increased potential for economic growth and tourism development. The proximity to Gauteng opens up opportunities to a larger market, which is of benefit to the district's agricultural and manufacturing sectors. The further potential inherent in exporting goods provides opportunities that need to be investigated. The main economic sectors of the Nkangala District are mining, manufacturing, energy, tourism and agriculture. The key demographic statistics for the Nkangala District Municipality are provided in Table *18*.

Table 18: Demographic Statistics for the Nkangala District Municipality

	2016	**2011**
Population	1 445 624	1 308 129
Age Structure		
Population uner 15	27.3%	28.5%
Population 15 to 64	68.6%	66.5%
Population over 65	4.1%	5.0%
Sex Ratio		
Males per 100 females	102.2	100.7
Population Growth		
Per annum	2.27%	n/a
Labour Market		
Unemployment rate (official)	n/a	30.0%
Youth Unemployment rate (official) 15-34	n/a	39.6%
Education (aged 20+)		
No schooling	9.0%	11.5%
Matric	35.0%	29.4%
Higher Education	8.7%	10.2%
Household Dynamics		
Households	421 144	356 911
Average Housegold Size	3.4	3.5
Formal Dwellings	81.6%	82.8%
Housing Owned	62.8%	58.9%
Household Services		

Flush toilet connected to sewerage	51.5%	48.7%
Weekly refuse removal	47.9%	48.3%
Piped water inside dwelling	39.3%	40.6%
Electricity for lighting	85.4%	85.7%

9.16.2 EMALAHLENI LOCAL MUNICIPALITY

eMalahleni Local Municipality is one of the six local municipalities in the Nkangala District Municipality. It forms part of the western regions of the province and borders Gauteng province. The southern parts of eMalahleni Local Municipality form part of the precinct referred to as the Energy Mecca of South Africa, due to its rich deposits of coal reserves and power stations such as Kendal, Matla, Duvha and Ga-Nala. The southward road and rail network connect the Emalahleni area to the Richards Bay and Maputo harbours, offering export opportunities for coal reserves. It comprises of eMalahleni City as the main urban centre in the municipality, with the other activity nodes/towns in the municipal area represented by Ogies, Phola, Ga-Nala, Thubelihle, Rietspruit, Van Dyksdrift andWilge. (www.emalahleni.gov.za).

The key statistics for the eMalahleni Local Municipality are provided below:

Total population	395,466
Young (0-14)	25,2%
Working Age (15-64)	71,2%
Elderly (65+)	3,6%
Dependency ratio	40,4
Sex ratio	111,8
Growth rate	3,58% (2001-2011)
Population density	148 persons/km2
Unemployment rate	27,3%
Youth unemployment rate	36%
No schooling aged 20+	5,8%
Higher education aged 20+	13,9%
Matric aged 20+	31,4%
Number of households	119,874

Number of Agricultural households	10,947
Average household size	3,2
Female headed households	27,9%
Formal dwellings	77,2%
Housing owned/paying off	45,3%
Flush toilet connected to sewerage	68,8%
Weekly refuse removal	67,2%
Piped water inside dwelling	54,9%
Electricity for lighting	73,4%

10. DESCRIPTION OF SPECIFIC ENVIRONMENTAL FEATURES AND INFRASTRUCTURE ON THE SITE

10.1 ENVIRONMENTAL FEATURES

Most of the study site consists of old cultivated lands and remaining opencast and underground mining areas or diggings from historic mining. The Olifants River borders the northern section of the mining right boundary. Various wetlands, natural and mad-made due to previous mining can be found on site. Other areas within close proximity include grazing areas, roads and homesteads.

10.2 EXISTING INFRASTRUCTURE ON THE STUDY AREA AND IN CLOSE PROXIMITY

There is existing mining infrastructure for the 2 Seam Mine in the project area, as described in Section 3. Other existing infrastructure in close proximity includes mining infrastructure, farmhouses and agricultural infrastructure. No railway line occurs close to the mine. The R547 borders the mining right area.

11. IMPACTS IDENTIFIED

(Provide a list of the potential impacts identified of the activities described in the initial site layout that will be undertaken, as informed by both the typical known impacts of such activities, and as informed by the consultations with affected parties together with the significance, probability and duration of the impacts)

Potential impacts that may be caused by the proposed development will be identified using input from the following:

- Views of I&APs;
- Existing information;
- Specialist investigations;

- Site visit with the project team; and
- Legislation.

The following potential major direct, indirect and cumulative impacts were identified:

- Land degradation
- Potential to alter the topography
- Loss of soil characteristics - erosion and compaction
- Potential for alien invasive establishment
- Reduced flow to downstream water catchment
- Potential pollution to water resources (surface, wetlands and groundwater)
- Loss of wetlands
- Drawdown cone from dewatering activities (groundwater quantity)
- Increased dust and emissions
- Increased noise levels
- Damage to property/infrastructure from blast events
- Potential damage to heritage sites (grave and/or archaeological artefacts)
- Influx of job seekers to the area
- Potential increased traffic – haulage
- Health and safety impacts;
- Potential injury and loss of health and life of humans; and
- Altered Socio-Economic Environment (Positive or negative).

Table 19: Impacts during the Construction phase activity specific impacts

ACTIVITY	ENVIRONMENTAL ASPECT	DESCRIPTION OF IMPACT	SIGNIFICANCE PRE-MITIGATION	PROBABILITY	DURATION
IMPACTS DURING THE CONSTRUCTION PHASE					
GENERAL IMPACTS					
Preparation	GEOLOGICAL AND SOILS	Soil erosion and soil compaction by heavy duty vehicles on site.	Medium (-)	Possible	Medium term
		Loss of topsoil	High (-)	Definite	Long term
		Vehicle and personnel as well as storage of materials, equipment and stockpiling compaction and degradation impacts.	Medium (-)	Possible	Medium term
		Contamination of soils through: - Indiscriminate disposal of waste; and - Accidental spillage of chemicals such as hydrocarbon-based fuels and oils or lubricants spilled from vehicles and other chemicals from operational and maintenance activities e.g. paints.	Medium (-)	Possible	Medium term
	HYDROLOGICAL SURFACE WATER AND GROUNDWATER	Stormwater, erosion and siltation impacts due to a lack of implementing measures to manage stormwater run-off quantity and quality during the operational phase.	Medium (-)	Possible	Long term
		Contamination of stormwater runoff and ground water, caused by: - Sediment release; - Chemicals such as hydrocarbon-based fuels and oils or lubricants spilled from construction vehicles; - Other chemicals from maintenance activities e.g. paints; and - Effluent discharges, due to a lack of stormwater management and system maintenance. - Surface mining and blasting – Nitrate pollution	Medium (-)	Possible	Long term

ACTIVITY	ENVIRONMENTAL ASPECT	DESCRIPTION OF IMPACT	SIGNIFICANCE PRE-MITIGATION	PROBABILITY	DURATION
IMPACTS DURING THE CONSTRUCTION PHASE					
GENERAL IMPACTS					
		Altered drainage patterns and stormwater runoff flows.	Medium (-)	Probable	Long term
	BIOLOGICAL, FAUNA, AVIFAUNA AND FLORA	Disturbance and loss of fauna through noise, light and dust pollution and hunting, trapping and killing of fauna.	Low (-)	Unlikely	Medium Term
		Spreading of alien invasive species and bush encroachment of indigenous species.	Medium (-)	Possible	Long term
		Loss of biodiversity as a result of vegetation clearing for infrastructure	Low (-)	Possible	Long term
	LAND USE	Change in land use as a result of mining activities.	High (-)	Definite	Long term
	VISUAL	Visibility from sensitive receptors / visual scarring of the landscape and impact on 'Sense of Place' as a result of the visibility of the mining site including the waste management facilities and mining activities.	Medium (-)	Definite	Medium term
	NOISE, VIBRATION AND LIGHTING	Nuisance and health risks caused by an increase in the ambient noise level as a result of noise impacts associated with the operation of the mining activities and processing.	Low (-)	Definite	Medium term
		Disturbance due to vibrations caused by vehicles.	Low (-)	Definite	Medium term
		Impact of security lighting on surrounding landowners and animals.	Low (-)	Definite	Long term

ACTIVITY	ENVIRONMENTAL ASPECT	DESCRIPTION OF IMPACT	SIGNIFICANCE PRE-MITIGATION	PROBABILITY	DURATION
IMPACTS DURING THE CONSTRUCTION PHASE					
GENERAL IMPACTS					
		Blasting and vibration related impacts (air blasts, ground vibration and fly rock)	High (-)	Possible	Medium term
	AIR QUALITY	Increased dust pollution (soil and ore fines), vehicles on gravel roads and waste rock, as well as other mining and processing activities.	Medium (-)	Definite	Long term
		Increased windborne dust (soil and ore fines), vehicle fumes and particulate matter PM10, altering air quality.	Medium (-)	Definite	Medium term
	WASTE (INCLUDING HAZARDOUS WASTE)	Generation and disposal of general waste, litter and hazardous material during the operational phase and operational waste i.e. waste rock, etc.	Medium (-)	Definite	Medium term
	SERVICES	Need for services e.g. water, electricity and sewerage systems, causing additional strain on natural resources and service infrastructure.	Low (-)	Unlikely	Long term
	TRAFFIC	The change in the traffic patterns as a result of increased traffic entering and exiting the operations on the surrounding road infrastructure and existing traffic.	Medium (-)	Definite	Long term
		Nuisance, health and safety risks caused by increased traffic on an adjacent to the study area including cars and heavy vehicles.	Medium (-)	Possible	Long term
	HEALTH AND SAFETY	Possibility of mining activities and workers causing veld fires, which can potentially cause injury and or loss of life to mine workers and surrounding landowners, visitors and workers.	Medium (-)	Possible	Long term

ACTIVITY	ENVIRONMENTAL ASPECT	DESCRIPTION OF IMPACT	SIGNIFICANCE PRE-MITIGATION	PROBABILITY	DURATION
IMPACTS DURING THE CONSTRUCTION PHASE					
GENERAL IMPACTS					
		Increased risk to public health and safety: Dangerous areas including the waste management activities and waste poses health risks and possible loss of life to mine workers and visitors to the site.	Medium (-)	Possible	Long term
	SOCIO-ECONOMIC	Socio-economic impact on farmers, labourers and surrounding landowners and residents due to negative impacts on groundwater, dust pollution, noise pollution etc.	Medium (-)	Definite	Long term
		Extended employment provision due to the implementation of the extension of the mining activities, allowing mining activities to continue for additional years.	High (+)	Definite	Medium to Long term
		Sourcing supplies from local residents and businesses boosting the local economy for an extended period of time.	Medium (+)	Possible	Long term

Table 20: Impacts during the operational phase – activity specific impacts

ACTIVITY	ENVIRONMENTAL ASPECT	DESCRIPTION OF IMPACT	SIGNIFICANCE PRE-MITIGATION	PROBABILITY	DURATION
IMPACTS DURING THE OPERATIONAL PHASE					
ACTIVITY SPECIFIC IMPACTS					
Opencast Mining	HYDROLOGICAL, SURFACE WATER, WETLANDS AND GROUNDWATER	Impact of Nitrate based explosives used during mining on groundwater quality. Contamination plume can affect the groundwater resource.	Medium (-)	Definite	Long term
		Impacts of dewatering on the groundwater aquifer should water be abstracted from ground water during the operational phase.	Medium (-)	Probable	Long term
		Groundwater contamination from storage of operational materials and hydrocarbons.	Medium (-)	Definite	Long term
		Contamination of stormwater runoff and ground water, caused by: - Sediment release; - Chemicals such as hydrocarbon-based fuels and oils or lubricants spilled from construction vehicles; - Other chemicals from maintenance activities e.g. paints; and - Effluent discharges, due to a lack of stormwater management and system maintenance.	Medium (-)	Definite	Long term
	WASTE	Generation and disposal of additional hazardous operational waste i.e. waste rock, etc.	Medium (-)	Definite	Long term
	ARCHAEOLOGICAL/ HERITAGE RESOURCES	Alteration of archaeological, historical and palaeontological resources that may be discovered during earthworks.	Low (-)	Possible	Permanent
	HEALTH AND SAFETY	Increased risk to public and worker health and safety.	Medium (-)	Possible	Permanent

ACTIVITY	ENVIRONMENTAL ASPECT	DESCRIPTION OF IMPACT	SIGNIFICANCE PRE-MITIGATION	PROBABILITY	DURATION
IMPACTS DURING THE OPERATIONAL PHASE					
ACTIVITY SPECIFIC IMPACTS					
	SOCIO-ECONOMIC	Extended employment provision due to the implementation of the extension of the mining activities, allowing mining activities to continue for additional years.	High (+)	Definite	Long term
	VIBRATION	Blasting and vibration related impacts (air blasts, ground vibration and fly rock)	High (-)	Possible	Medium term
Loading and hauling to Plant	HYDROLOGICAL, SURFACE WATER AND GROUNDWATER	Possible impact on surface and groundwater from contaminated process water.	Low (-)	Probable	Long term
		Possible impact of spills and overflows from pollution control dams and facilities.	low (-)	Possible	Medium term
	WASTE	Generation and disposal of additional hazardous operational waste i.e. waste rock etc.	Medium (-)	Definite	Long term
	AIR QUALITY	Increased dust pollution (soil and ore fines), vehicles on gravel roads and transport of chrome	Medium (-)	Definite	Long term
		Increased windborne dust (soil and ore fines), vehicle fumes and particulate matter PM10, altering air quality.	Medium (-)	Definite	Long term
	HEALTH AND SAFETY	Increased risk to public and worker health and safety.	Medium (-)	Possible	Permanent
	SOCIO-ECONOMIC	Extended employment provision due to the implementation of the extension of the mining activities, allowing mining activities to continue for additional years.	High (+)	Definite	Long term

ACTIVITY	ENVIRONMENTAL ASPECT	DESCRIPTION OF IMPACT	SIGNIFICANCE PRE-MITIGATION	PROBABILITY	DURATION
IMPACTS DURING THE OPERATIONAL PHASE					
ACTIVITY SPECIFIC IMPACTS					
	VIBRATION	Increase in vibration as a result of heavy equipment and processing plant.	Low (-)	Possible	Medium term
Processing of RoM	HYDROLOGICAL SURFACE WATER AND GROUNDWATER	Impact on surface and groundwater from contaminated process water.	Low (-)	Probable	Long term
		Impact of spills and overflows from pollution control dams and facilities.	low (-)	Possible	Medium term
	WASTE	Generation and disposal of additional hazardous operational waste i.e. waste rock, tailings, etc.	Medium (-)	Definite	Long term
	HEALTH AND SAFETY	Increased risk to public and worker health and safety.	Medium (-)	Possible	Permanent
	AIR QUALITY	Increased windborne dust (soil and ore fines), vehicle fumes and particulate matter PM10, altering air quality.	Medium (-)	Definite	Long term
	SOCIO-ECONOMIC	Employment opportunities due to the implementation of the of the mining activities.	High (+)	Definite	Long term
Maintenance of the waste rock dumps.	HYDROLOGICAL, SURFACE WATER AND GROUNDWATER	Seepage from waste management activities e.g. waste rock dumps, could cause a contamination plume affecting the underground water resources.	Medium (-)	Probable	Long term
		Discharge from tailings and associated water handling infrastructure can cause contamination of surface water resources.	Medium (-)	Probable	Long term

ACTIVITY	ENVIRONMENTAL ASPECT	DESCRIPTION OF IMPACT	SIGNIFICANCE PRE-MITIGATION	PROBABILITY	DURATION
IMPACTS DURING THE OPERATIONAL PHASE					
ACTIVITY SPECIFIC IMPACTS					
		Impact on surface and groundwater quality as a result of oxidation of sulphates from the tailings and waste rock placed back in put as part of rehabilitation	Medium (-)	Definite	Long term
	WASTE	Generation and disposal of additional hazardous operational waste i.e. waste rock, tailings, etc.	Medium (-)	Definite	Long term
	AIR QUALITY	Increased windborne dust (soil and ore fines), vehicle fumes and particulate matter PM10, altering air quality.	Medium (-)	Definite	Long term
	HEALTH AND SAFETY	Increased risk to public and worker health and safety.	Medium (-)	Possible	Permanent
	SOCIO-ECONOMIC	Economic impact should there be an incident of public health and safety.	Medium (-)	Possible	Long term
Transport of ROM to market	HYDROLOGICAL, SURFACE WATER AND GROUNDWATER	Increase in surface water pollution as a result of spills and transport of ore.	Low (-)	Probable	Medium term
	AIR QUALITY	Increased windborne dust (soil and ore fines), vehicle fumes and particulate matter PM10, altering air quality.	Medium (-)	Definite	Long term
	HEALTH AND SAFETY	Increased risk to public and worker health and safety.	Medium (-)	Possible	Permanent
	SOCIO-ECONOMIC	Sourcing supplies from local residents and businesses boosting the local economy for an extended period of time.	Medium (+)	Possible	Long term

ACTIVITY	ENVIRONMENTAL ASPECT	DESCRIPTION OF IMPACT	SIGNIFICANCE PRE-MITIGATION	PROBABILITY	DURATION
IMPACTS DURING THE OPERATIONAL PHASE					
ACTIVITY SPECIFIC IMPACTS					
	VIBRATION	Disturbance due to vibrations caused by heavy duty vehicles.	Low (-)	Probable	Long term
	TRAFFIC	The change in the traffic patterns as a result of increased traffic entering and exiting the operations on the surrounding road infrastructure and existing traffic.	Medium (-)	Definite	Medium term
		Nuisance, health and safety risks caused by increased traffic on an adjacent to the study area including cars and heavy vehicles.	Medium (-)	Possible	Medium term

Table 21: Impacts during the closure phase – general impacts

ACTIVITY	ENVIRONMENTAL ASPECT	DESCRIPTION OF IMPACT	SIGNIFICANCE PRE-MITIGATION	PROBABILITY	DURATION
IMPACTS DURING THE CLOSURE AND POST-CLOSURE PHASES					
GENERAL IMPACTS					
Removal of surface infrastructure and rehabilitation of opencast mine	GEOLOGICAL AND SOILS	Soil compaction by heavy duty vehicles.	Medium (-)	Possible	Medium term
		Contamination of soils through: - Accidental spillage of chemicals such as hydrocarbon-based fuels and oils or lubricants spilled from heavy duty vehicles and other chemicals.	Medium (-)	Possible	Short term
	HYDROLOGICAL, SURFACE WATER AND	Stormwater, erosion and siltation impacts due to a lack of implementing measures to manage stormwater run-off quantity and quality during the closure phase.	Medium (-)	Possible	Medium term

ACTIVITY	ENVIRONMENTAL ASPECT	DESCRIPTION OF IMPACT	SIGNIFICANCE PRE-MITIGATION	PROBABILITY	DURATION
IMPACTS DURING THE CLOSURE AND POST-CLOSURE PHASES					
GENERAL IMPACTS					
	GROUNDWATER	Contamination of stormwater runoff and ground water, caused by: - Sediment release; - Chemicals such as hydrocarbon-based fuels and oils or lubricants spilled from heavy duty vehicles; - Effluent discharges, due to a lack of stormwater management.	Medium (-)	Possible	Medium term
		Impacts of dewatering on the groundwater aquifer should water be abstracted from ground water during the closure phase.	Medium (-)	Possible	Medium term
		Seepage from waste management facilities could cause a contamination plume affecting the underground water resources.	Medium (-)	Possible	Long term
		Impact on surface flow as a result of new topography after rehabilitation	Medium (-)	Possible	Long term
		Decrease in groundwater quality as a result of pollution plume	Medium (-)	Possible	Long term
	BIOLOGICAL	Disturbance and loss of fauna through noise, light and dust pollution as well as hunting, trapping and killing of fauna.	Low (-)	Definite	Long term
		Spreading of alien invasive species and bush encroachment of indigenous species.	Medium (-)	Possible	Long term
	VISUAL	Visibility from sensitive receptors / visual scarring of the landscape as a result of the closure and rehabilitation activities.	Low (-)	Definite	Medium term
		Visibility of solid domestic and operational waste.	Low (-)	Possible	Medium term

ACTIVITY	ENVIRONMENTAL ASPECT	DESCRIPTION OF IMPACT	SIGNIFICANCE PRE-MITIGATION	PROBABILITY	DURATION
IMPACTS DURING THE CLOSURE AND POST-CLOSURE PHASES					
GENERAL IMPACTS					
	NOISE, VIBRATION AND LIGHTING	Nuisance and health risks caused by an increase in the ambient noise level as a result of noise impacts associated with the operation of heavy-duty vehicles and equipment.	Low (-)	Definite	Medium term
		Disturbance due to vibrations caused by heavy duty vehicles.	Low (-)	Probable	Medium term
		Impact of security lighting on surrounding landowners and animals.	Low (-)	Definite	Medium term
	AIR QUALITY	Dust (soil and ore fines) pollution due to rehabilitation activities and heavy-duty vehicles.	Medium (-)	Definite	Long term
		Windborne dust (soil and ore fines) and vehicle fumes and particulate matter PM10, altering air quality.	Medium (-)	Definite	Long term
	SERVICES	Need for additional services i.e. water, electricity and sewerage systems during the closure phase causing additional strain on natural resources and infrastructure.	Low (-)	Unlikely	Short term
	TRAFFIC	The change in the traffic patterns as a result of traffic entering and exiting the proposed mine on the surrounding road infrastructure and existing traffic.	Low (-)	Possible	Medium term
		Nuisance, health and safety risks caused by increased traffic on an adjacent to the study area including cars and heavy vehicles.	Low (-)	Possible	Medium term
	HEALTH AND SAFETY	Possibility of closure activities and workers causing veld fires, which can potentially cause injury and or loss of life to workers and surrounding landowners and visitors.	Low (-)	Possible	Medium term

ACTIVITY	ENVIRONMENTAL ASPECT	DESCRIPTION OF IMPACT	SIGNIFICANCE PRE-MITIGATION	PROBABILITY	DURATION
IMPACTS DURING THE CLOSURE AND POST-CLOSURE PHASES					
GENERAL IMPACTS					
		Increased risk to public health and safety: Dangerous areas including the waste management facilities poses health risks and possible loss of life to mine workers and visitors to the site.	Medium (-)	Possible	Long term
		Increased risk to public and worker health and safety.	Medium (-)	Possible	Long term
	SOCIO-ECONOMIC	Socio-economic impact on farmers, labourers and surrounding landowners and residents due to negative impacts on groundwater, dust pollution, noise pollution etc.	Medium (-)	Definite	Long term
		Economic impact should there be an incident of public health and safety.	Medium (-)	Possible	Medium term
		Sourcing supplies from local residents and businesses boosting the local economy for an extended period of time.	Medium (+)	Possible	Long term

Table 22: Closure and post-closure specific impacts

ACTIVITY	ENVIRONMENTAL ASPECT	DESCRIPTION OF IMPACT	SIGNIFICANCE PRE-MITIGATION	PROBABILITY	DURATION
IMPACTS DURING THE CLOSURE AND POST-CLOSURE PHASES					
PHASE SPECIFIC IMPACTS					
Rehabilitation of site, removal of	GEOLOGICAL AND SOILS	Soil erosion, loss of agricultural potential	Medium (-)	Definite	Long term

ACTIVITY	ENVIRONMENTAL ASPECT	DESCRIPTION OF IMPACT	SIGNIFICANCE PRE-MITIGATION	PROBABILITY	DURATION
IMPACTS DURING THE CLOSURE AND POST-CLOSURE PHASES					
PHASE SPECIFIC IMPACTS					
infrastructure, re-seeding of rehabilitated areas.	HYDROLOGICAL, SURFACE WATER AND GROUNDWATER	Seepage from waste rock and tailings could cause a contamination plume affecting the groundwater resources.	Medium (-)	Probable	Long term
		Ground water pollution	Medium (-)	Probable	Long term
	WASTE	Generation and disposal of additional hazardous operational waste i.e. waste rock and tailings.	Medium (-)	Definite	Long term
	BIOLOGICAL, FAUNA AND FLORA	Rehabilitation of area with natural vegetation and re-establishment of local biodiversity	Medium (-)	Definite	Long term
		Loss of ecological function in wetland, pans and stream	Medium (-)	Possible	Long term

Table 23: Impacts as a result of not implementing the proposed development

ACTIVITY	ENVIRONMENTAL ASPECT	DESCRIPTION OF IMPACT	SIGNIFICANCE PRE-MITIGATION	PROBABILITY	DURATION
NO-GO ALTERNATIVE					
N/A	SOCIO-ECONOMIC	Reduced period of providing employment for local residents and skills transfer to unskilled and semi-skilled unemployed individuals.	Very high (-)	Definite	Permanent

ACTIVITY	ENVIRONMENTAL ASPECT	DESCRIPTION OF IMPACT	SIGNIFICANCE PRE-MITIGATION	PROBABILITY	DURATION
NO-GO ALTERNATIVE					
		Reduced period of development and upliftment of the surrounding communities and infrastructure.	Very high (-)	Definite	Permanent
		Reduced period of development of the economic environment, by job provision and sourcing supplies for and from local residents and businesses.	Very high (-)	Definite	Permanent
		Positive: No additional negative impacts on the environment	Medium (+)	Definite	Permanent
	GEOLOGICAL	Sterilisation of mineral resource	Very high (-)	Definite	Permanent
	HYDROLOGICAL, SURFACE WATER AND GROUNDWATER	No additional pollution to surface and groundwater.	Medium (+)	Definite	Permanent
		Un-rehabilitated area will still cause surface and groundwater pollution	Medium (-)	Definite	Permanent
	WASTE	No waste generated as a result of the activities	Medium (+)	Definite	Permanent
	LAND USE	Agricultural activities will continue on the area and monoculture	Low (+)	Definite	Permanent

11.1.1 METHODOLOGY USED IN DETERMINING THE SIGNIFICANCE OF ENVIRONMENTAL IMPACTS

A “significant impact” is defined as it is defined in the EIA Regulations (2014): “an impact that may have a notable effect on one or more aspects of the environment or may result in non-compliance with accepted environmental quality standards, thresholds or targets and is determined through rating the positive and negative effects of an impact on the environment based on criteria such as duration, magnitude, intensity and probability of occurrence”. The objective of this EIA methodology is to serve as framework for accurately evaluating impacts associated with current or proposed activities in the biophysical, social and socio-economical spheres. It aims to ensure that all legal requirements and environmental considerations are met in order to have a complete and integrated environmental framework for impact evaluations.

11.1.2 ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REGULATIONS, 2017 [AS AMENDED] REQUIREMENTS

The Environmental Impact Assessment (EIA) 2014 Regulations [as amended] promulgated in terms of Sections 24 (5), 24M and 44 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) [as amended] (NEMA), requires that all identified potential impacts associated with the proposed project be assessed in terms of their overall potential significance on the natural, social and economic environments. The criteria identified in the EIA Regulations (2014) include the following:

- Nature of the impact;
- Extent of the impact;
- Duration of the impact
- Probability of the impact occurring;
- Degree to which impact can be reversed;
- Degree to which impact may cause irreplaceable loss of resources;
- Degree to which the impact can be mitigated; and
- Cumulative impacts.

Elemental Sustainability has developed an impact assessment methodology (as defined below) whereby the Significance of a potential impact is determined through the assessment of the relevant temporal and spatial scales determined of the Extent, Magnitude and Duration criteria associated with a particular impact. This method does not explicitly define each of the criteria but rather combines them and results in an indication of the overall significance.

11.1.3 ELEMENTAL SUSTAINABILITY IMPACT ASSESSMENT METHODOLOGY

The impact assessment methodology used to determine the significance of impacts prior and after mitigation is presented below.

Extent of the impact

The EXTENT of an impact is the physical extent/area of impact or influence.

Score	Extent	Description
1	Footprint	The impacted area extends only as far as the actual footprint of the activity.
2	Site	The impact will affect the entire or substantial portion of the site/property.
3	Local	The impact could affect the area including neighbouring properties and transport routes.
4	Region	Impact could be widespread with regional implication.
5	National	Impact could have a widespread national level implication.

Duration of the impact

The DURATION of an impact is the expected period of time the impact will have an effect.

Score	Duration	Description
1	Short term	The impact is quickly reversible within a period of less than 2 years, o limited to the construction phase, or immediate upon the commencemen of floods.
2	Short to medium term	The impact will have a short term lifespan (2–5 years).
3	Medium term	The impact will have a medium term lifespan (6 – 10 years)
4	Long term	The impact will have a medium term lifespan (10 – 25 years)
5	Permanent	The impact will be permanent beyond the lifespan of the development

Intensity of the impact

The INTENSITY of an impact is the expected amplitude of the impact.

Score	Intensity	Description
1	Minor	The activity will only have a minor impact on the affected environment in such a way that the natural processes or functions are not affected.
2	Low	The activity will have a low impact on the affected environment.
3	Medium	The activity will have a medium impact on the affected environment, bu function and process continue, albeit in a modified way.
4	High	The activity will have a high impact on the affected environment which may be disturbed to the extent where it temporarily or permanently ceases.
5	Very High	The activity will have a very high impact on the affected environment which may be disturbed to the extent where it temporarily or permanently ceases.

Reversibility of the impact

The REVERSIBILITY of an impact is the severity of the impact on the ecosystem structure

Score	Reversibility	Description
1	Completely reversible	The impact is reversible without any mitigation measures and managemen measures
2	Nearly completely reversible	The impact is reversible without any significant mitigation and managemen measures. Some time and resources required.
3	Partly reversible	The impact is only reversible with the implantation of mitigation and management measures. Substantial time and resources required.
4	Nearly irreversible	The impact is can only marginally be reversed with the implantation o significant mitigation and management measures. Significant time and resources required to ensure impact is on a controllable level.
5	Irreversible	The impact is irreversible.

Probability of the impact

The PROBABILITY of an impact is the severity of the impact on the ecosystem structure

Score	Probability	Description
1	Improbable	The possibility of the impact occurring is highly improbable (less than 5% of impact occurring).
2	Low	The possibility of the impact occurring is very low, due either to the circumstances, design or experience (5% to 30% of impact occurring).
3	Medium	There is a possibility that the impact will occur to the extent that provision must be made therefore (30% to 60% of impact occurring).
4	High	There is a high possibility that the impact will occur to the extent that provision must be made therefore (60% to 90% of impact occurring).
5	Definite	The impact will definitely take place regardless of any prevention plans, and there can only be relied on migratory actions or contingency plans to contain the effect (90% to 100% of impact occurring).

Calculation of Impacts – Significance Rating of Impact

Significance is determined through a synthesis of the various impact characteristics and represents the combined effect of the Irreplaceability (Magnitude, Extent, Duration, and Intensity) multiplied by the Probability of the impact. The significance of an impact is rated according the scores a presented below:

Equation 1:

Significance = Irreplaceability (Reversibility + Intensity + Duration + Extent) X Probability

Significance Rating

Score	Significance	Colour Code
1 to 20	Very low	
21 to 40	Low	
41 to 60	Medium	
61 to 80	High	
81 to 100	Very high	

Degree to which the impact can be mitigated: *The effect of mitigation measures on the impact and its degree of effectiveness:*

Equation 2:

Significance Rating (WM) = Significance Rating (WOM) x Mitigation Efficiency

Mitigation Efficiency (ME)	
High	0,2
Medium to High	0,4
Medium	0,6
Low to Medium	0,8
Low	1,0

Confidence rating: *Level of certainty of the impact occurring*.

- **Certain**
- **Sure**
- **Unsure**

Cumulative impacts: *The effect the combination of past, present and "reasonably foreseeable" future actions have on aspects.*

- Very Low cumulative impact
- Low cumulative impact
- Medium cumulative impact
- High cumulative impact

12. THE POSITIVE AND NEGATIVE IMPACTS AND ALTERNATIVES

Potential impacts identified during the scoping process, with inputs from I&APs, are discussed under environmental component headings in this section. These discussions should be read with the corresponding descriptions of the baseline environment.

The potential impacts associated with the project phases (construction, operations, decommissioning and closure) have been identified and described and reference has been made to the studies/investigations that are required to inform the impact assessment. In the absence of site-specific studies, the assessment conclusions are conservative. It follows that the assessment provided below is a preliminary assessment which will, after having obtained specialist input, be refined/changed as necessary in the EIA, as appropriate.

Geology

No geological impacts such as sterilisation of mineral resources are expected as the proposed project is being planned in a manner that allows for the maximum extraction of the targeted commodities within the project area.

Topography

The topography of the project area would be altered by project related activities. The topography of the site could be altered through:

- Opencast mining; and
- alteration of drainage patterns.

Biodiversity

In the broadest sense, biodiversity provides value for ecosystem functionality, aesthetic, spiritual, cultural, and recreational reasons. The known ecosystem related value is listed as follows:

- Soil formation and fertility maintenance;
- Primary production through photosynthesis, as the supportive foundation for life;
- Provision of food and fuel;
- Provision of shelter and building materials;
- Regulation of water flows and water quality;
- Regulation and purification of atmospheric gases;
- Moderation of climate and weather;
- Control of pests and diseases; and
- Maintenance of genetic resources (key for medicines, crop and livestock breeding).

The discussions below consider terrestrial and aquatic ecosystems.

Issue: Physical Loss and/or general disturbance of terrestrial biodiversity

The habitat units of the project area will be impacted on and degraded to some extent as a result agricultural and anthropogenic activities, however, the project area still contains habitat units which are considered to be ecologically sensitive. The proposed mining activities impact on terrestrial biodiversity in the area where the opencast mine will be constructed.

Mitigation and management measures that will be identified by the specialist studies will be implemented, included in the EIA and EMPr to ensure that the impact reduce.

Water Resources - Surface Water

The discussion below considers surface water, and focuses on possible impact associated with the proposed project.

Issue: Reduction in surface water quantity and quality

The proposed mining area has the potential to negatively impact on water resources. Surface water impacts are associated with the processing of ore and disposal of waste onto temporary waste storage facilities. Impact associated with processing and disposal will be assessed and mitigation and management measures will be included in the EIA phase. In the absent of mitigation measures will the direct impact on surface resources be medium and the indirect impact high. With mitigation measured the significance of the potential impacts can be reduced.

Water Resources – Groundwater

The discussion below considers groundwater, and focuses on possible impact associated with the proposed project.

Issue: Reduction in groundwater quantity and quality

Mining projects have the potential to negatively impact on water resources through abstraction for water supply and dewatering activities, regardless of the alternatives that are selected. Mining projects also present a number of emission sources that can have a negative impact on water quality. Contaminants from the project are expected to include operation related consumables, silt, fuels, hydrocarbons, residues, blasting equipment, sulphate pollution and hazardous wastes. Nitrate pollution associated with the mining method is anticipated.

In the absence of mitigation, given the importance of the groundwater system and based on the mine plan as presented in this report, the severity of unmitigated impacts would be high. Regarding water quantity impacts, where water resources are used by third party users, potential impacts affecting third party supply could occur. Impacts could extend beyond the site boundary to the water users and could extend beyond closure. In time, losses in water quantities and reduced water qualities could be reversed, however, at this stage, the related time period is not known. The related unmitigated significance is high. Important to note is that the use or potential contamination of water resources is regulated through water use licensing requirements of the DHSWS as the custodian of water resources in South Africa. Where the project plan takes into account the findings of specialist studies, applies the necessary mitigation to avoid, minimises or remedy impacts in line with the mitigation hierarchy and operates under a water use license, the significance of potential impacts can be reduced.

Blasting, Vibration and Noise

Issue: Blasting and vibration related impacts

The mining method involves drill and blasting. Blasting activities have the potential to impact on people, animals and structures located in the vicinity of the proposed project area.

The potential impact could have a medium severity in the unmitigated scenario. In the mitigated scenario, this severity will remain medium. A number of measures can be taken to control blasts and associated impacts.

Socio-Economic

Issue: Positive and negative socio-economic impacts

Mining projects have the potential to have positive and/or negative impacts on the following, regardless of the alternatives that are selected:

- Continued employment for current workers;;
- the local and national economy;
- social structures within communities;
- increased pressure on basic services;
- quality of life and health related issues
- livelihoods of businesses

Socio-economic impacts would occur during all project phases. In the absence of mitigation that focuses on enhancing positive impacts and reducing negative impacts, the severity of unmitigated impacts would be medium for negative impacts and medium (positive) for positive impacts. The related unmitigated significance could be medium. Where the project planning takes into account and applies the necessary mitigation to avoid, minimises or remedy impacts in line with the mitigation hierarchy, the significance of potential negative impacts can be reduced and potential positive impacts can be increased.

Land Use

Issue: Impact on surrounding land uses

The dominant land use in the proposed opencast area is agriculture with some residential houses and the surrounding mining activities. Project activities have the potential to impact on these land uses in all phases, regardless of the alternatives that are selected. These land uses may be affected by one or more of the biophysical, cultural and socio-economic impacts that could occur as a result of the proposed project. In the absence of mitigation that focuses on effectively mitigating each biophysical, cultural and socio-economic impact type, the severity would be medium; potential impacts would extend to the land uses located beyond the site boundary. The severity is likely to decrease with an increase in distance from the impact source. For the proposed mining areas, with mitigation in place, the duration of impacts would be linked to the life of the project. Where project planning takes into account the findings of specialist studies and applies the necessary mitigation to avoid, minimises or remedy impacts in line with the mitigation hierarchy, the significance of potential impacts could be reduced.

Heritage/Cultural resources

Issue: Loss of or damage to heritage

The opencast mining activities, in all phases prior to closure, have the potential to remove, damage or destroy heritage/cultural and palaeontological resources, either directly or indirectly, and may result in the loss of the resource for future generations. In the absence of mitigation measures, if the resources are considered to be of high heritage significance, the unmitigated severity could be high. The related unmitigated significance would be high. Where the project planning takes into account the findings of the specialist studies and either avoids

resources of high significance or alternatively document and/or relocate resources in line with a permit or the necessary approvals the significance of potential impacts can be reduced.

Traffic

Issue: Effect on roads due to project related traffic

Mining projects contribute to increased traffic and introduce mine-related trucks on public road networks which can result in an inconvenience to current road users, higher accidents (for people and animals) decreased road service levels and/or increased road damage. This in turn can put pressure on the relevant roads authority to increase the maintenance programmes and/or upgrade the roads.

In the absence of active mining activities, traffic volumes along the secondary road and the N4 are generally high and mostly limited to light vehicles (rather than heavy vehicles that would be generated by the mining operation). Regardless of the alternatives that are selected, the project would contribute to traffic volumes on public roads. Traffic impacts are expected from construction through to the end of the decommissioning phase.

In the absence of mitigation measures that take into account other road uses and users, project-related use of public roads could result in a high severity impact. Any serious injury or death is a long-term impact that would extend to the communities to which injured people/animals belong. The related unmitigated significance is high. With mitigation that focuses on ensuring adequate capacity on the road network and safety measures for other road users, the significance could reduce to medium as the severity, duration and frequency of potential accidents is expected to reduce.

Soil and Land Capability

Issue: Loss of soil and land capability through removal, erosion and compaction

Topsoil is generally a resource of high value containing a gene bank of vegetation seeds and other organisms. Soil resources can be lost through removal, erosion and compaction which can result in a loss of soil functionality as an ecological driver. The conservation of topsoil, soil management practises and the related rehabilitation strategy and initiatives become is highly important in achieving the post-closure land use. A number of activities in all phases have the potential to result in the loss of soils and related land capability, regardless of the alternatives that are selected.

In the absence of soil conservation and management measures and a rehabilitation plan that supports the post closure land use, the severity of potential impacts is expected to be high due to the impacted nature of the project area. Given the extent of the planned mining, the area of disturbance could be significant if rehabilitation is not followed. Without mitigation the loss of soil and related land capability would definitely occur. This impact significance could be reduced to medium/low with the implementation of mitigation measures focused on minimising impacts during operations and remedying any negative impacts at closure.

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

Table 24 provides possible mitigation measures that should be implemented to reduce the potential impacts. This section will be updated with the results and recommendation methods provided by the specialist studies during the EIAr phase.

Table 24: Mitigation measures (Construction, Operational and Closure Phase)

Activity	Potential Impact	Possible mitigation	Potential for residual risk
Opencast mining establishment mining infrastructure (access roads; contractor's yard, tailings facility, PCDs) Transport and processing of coal. Rehabilitation of area. General Site activities.	Physical loss and/or general disturbance of terrestrial biodiversity	• Avoid sensitive areas as far as practically possible. • Implementation of an alien invasive species programme. • Limit emissions (dust, light, noise). • Training of employees on the value of biodiversity. • Zero tolerance for harming and harvesting fauna and flora. • Effective waste management and pollution prevention. • Effective rehabilitation to achieve post closure land use.	Medium
	Reduction in surface water quantity and quality.	• Design and implement contamination containment measures. • Mine infrastructure will be constructed and operated so as to comply with the National Water Act No. 36 of 1998 and Regulation 704 (4 June 1999): o Clean and dirty water system will be separate. o Clean run-off will be diverted away from the site. o Dirty water will be contained. o The necessary exemptions and approvals will be obtained for activities and o Infrastructure located within 100 m or within the 1:100-year floodline of the water courses. • Conduct surface water monitoring and implement remedial actions as required. • Effective equipment and vehicle maintenance. • Fast and effective clean-up of spills. • Effective waste management. • Education and training of workers. • Implement WUL requirements and mitigation measures • Effective rehabilitation to achieve post closure land use.	Medium

Activity	Potential Impact	Possible mitigation	Potential for residual risk
	Reduction in groundwater quantity and quality.	• Groundwater pollution will be identified and included into a groundwater management plan which will be implemented as part of the operational and closure phase • Implement WUL requirements and mitigation measures. • Conduct groundwater monitoring and implement remedial actions as required. This includes compensation for mine related loss of third-party water supply. • Effective equipment and vehicle maintenance. • Fast and effective clean-up of spills.	Medium
	Blasting and vibration related impacts	• Develop and implement a vibration and blast management plan which addresses vibration and blast design criteria to limit ground vibration. • Remediation of all impacts caused by vibration and blasting.	Medium
	Positive and negative socio-economic impacts	• Develop and implement procedures for recruiting, training and procurement that align with good industry practise (SLP). • Employ local people and procure goods and services locally as far as practically possible. • Effective communication to manage expectations with regard to employment and other opportunities. • Ensure that closure planning considerations address the re-skilling of employees for the downscaling, early closure and long-term closure scenarios. • Work together with communities to manage issues such as security.	Medium
	Negative visual impacts	• Limit the extent of disturbed areas. • Supress dust to prevent a visual dust cloud. • Effective waste management. • Implement effective use of lighting which reduces light spill. • Effective rehabilitation to achieve post closure land use. • The use of berms where appropriate.	Low
	Loss and sterilisation of mineral resources	• Incorporate cross discipline planning to avoid mineral sterilisation. A key component of the cross-cutting function is the Mine resource manager.	Low
	Loss of soil and land capability through removal, erosion and compaction	• Limit site clearance to what is absolutely necessary for the immediate future mining area. • Strip, handle, stockpile and re-use soil resources in line with site specific soil conservation and management plan.	Medium

Activity	Potential Impact	Possible mitigation	Potential for residual risk
	Physical loss and/or general disturbance of terrestrial biodiversity and aquatic ecosystems	• Undertake pre-construction surveys of the development footprints for species suitable for search and rescue operations. • Avoid sensitive areas as far as practically possible. • Obtain relevant permits prior to removal of protected species. • Implementation of an alien invasive species programme. • Limit emissions (dust, light, noise). • Training of employees on the value of biodiversity. • Zero tolerance for harming and harvesting fauna and flora. • Effective waste management and pollution prevention. • Effective rehabilitation to achieve post closure land use.	Medium
	Increase in Noise and Air pollution	• Maintain vehicles and equipment in good working order. • Provide noise berms where possible between activities and receptors. • Conduct noise monitoring in response to noise complaints. • Limit disturbed areas. • Supress dust effectively. • Maintain equipment and vehicles in good working order. • Monitor pollutants of concern and implement additional mitigation as required. • Effective rehabilitation to achieve post closure land use. • Undertake a carbon footprint assessment.	Medium/Low
	Effect on roads due to project related traffic	• Construct safe access points/intersections. • Educate employees (temporary and permanent) about road safety. • Enforce strict vehicle speeds. • If a person or animal is injured by transport activities an emergency response procedure must be implemented.	Medium
	Change in land use affecting surrounding land uses	• Effectively manage biophysical, cultural and socio-economic impacts. • Effectively rehabilitate infrastructure area in line with an approved rehabilitation plan that meets the post closure land use objectives and ensure successful rehabilitation as soon as mining is complete. • Establish a stakeholder communication and grievance mechanisms for the duration of the mining operation.	Medium

Activity	Potential Impact	Possible mitigation	Potential for residual risk
River Diversion	Physical loss and/or general disturbance of aquatic biodiversity	• Undertake pre-construction surveys of the development footprints for species suitable for search and rescue operations. • Avoid sensitive areas as far as practically possible. • Obtain relevant permits prior to removal of protected species. • Implementation of an alien invasive species programme. • Limit emissions (dust, light, noise). • Training of employees on the value of biodiversity. • Zero tolerance for harming and harvesting fauna and flora. • Effective waste management and pollution prevention. • Effective rehabilitation.	Medium
River Diversion	Reduction in surface water quality	• Implementation of erosion protection measures to reduce sedimentation; • Stabilisation of embankment to prevent erosion;	Medium

12.2 THE OUTCOME OF THE SITE SELECTION MATRIX. FINAL SITE LAYOUT PLAN

(Provide a final site layout plan as informed by the process of consultation with interested and affected parties)

The final site layout plan will be described in the EIAr / EMPr, once all specialist studies have been completed and comments from I&APs have been received. In the absence of site-specific specialist studies, it is not possible to complete a final site selection matrix at this stage. Please refer to Appendix C for a preliminary layout of the mining schedule for the proposed mining area.

The positioning of the mining areas was informed by the position of the mineable resource and ensuring a feasible access point to the mineable resource. Therefore, no locational alternatives are considered in this Scoping Report. However, in terms of the location of the infrastructure alternative sites have been considered as discussed in Section 7.

12.2.1 MOTIVATION WHERE NO ALTERNATIVE SITES WERE CONSIDERED

Refer to Section 7, which refers to the various alternatives that have been considered for the 2 Seam Mine project.

12.2.2 STATEMENT MOTIVATING THE PREFERRED SITE

(Provide a statement motivation the final site layout that is proposed)

The final site layout plan will be described in the EIR / EMPR, once all specialist and engineering designs have been completed and comments from I&APs have been received. Please refer to Appendix C for a preliminary layout of the mining layout plan for the proposed mining area.

13. PLAN OF STUDY FOR THE ENVIRONMENTAL IMPACT ASSESMENT PROCESS

The section below outlines the proposed plan of study that will be conducted for the various environmental aspects during the EIA Phase. It is important to note that the plan of study will also be guided by comment obtained from I&AP's and other stakeholders during the PPP.

The alternatives considered and discussed in Section 7, including land use, location, and mining alternatives have culminated into the identification of potentially feasible development alternatives. The feasible development alternatives are discussed below.

13.1 DESCRIPTION OF ALTERNATIVES TO BE CONSIDERED INCLUDING THE OPTION OF NOT GOING AHEAD WITH THE ACTIVITY.

Refer to the section on alternatives for a full description as discussed in this report.

The following alternatives were investigated as feasible alternatives:

- *The site on which the proposed mining sections are to be located (site and layout alternatives);*

The location of the proposed mining is based on the availability of a resources and the layout is to ensure that minimal sterilisation of the resources takes place. Specialist studies will be completed in the EIA phase and the input of the specialist studies will be taken into account to establish the final layout.

- *The mining method (technology alternatives)*

The opencast mining method will be applied to the proposed mining areas. Underground mining is not feasible due to the shallow depth of the resources and the fact that the application is for three mining permits to be owned by different applicants.

- *Design alternatives*

The layout plans are based on the availability of resources and geological structures. Layout plans can be altered based on resources, geological information and specialist findings.

- Not implementing the mining activities (*No – Go alternative*)

This option will be discussed and assessed in further detail. The no-go alternative will result in the sterilisation of a resources. The un-rehabilitated area of historical mining will remain un-rehabilitated and illegal mining will continue. Agriculture will continue on sections of the proposed areas.

13.2 DESCRIPTION OF THE ASPECTS TO BE ASSESSED AS PART OF THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

This section lists the aspects to be subjected to specialist investigation in the EIA phase in line with the terms of reference outlined in Table 25 below. These include:

- Agricultural Impact Assessment;
- Archaeological and Cultural Heritage Impact Assessment;
- Palaeontology Impact Assessment;
- Terrestrial Biodiversity Impact Assessment;
- Aquatic Biodiversity Impact Assessment
- Hydrogeological Assessment;
- Hydropedological Assessment;
- Hydrological Assessment (including water balance);
- Geotechnical Assessment;
- Storm Water Management Plan; and
- Closure Plan and Quantum Report.

This section describes the nature and extent of the investigations required. In particular, it describes the scope of work for the specialist investigations. The impact assessments and detailed management measures for each aspect will be included in the EIAr. Copies of the specialist reports will be attached as appendices to the EIAr.

13.3 DESCRIPTION OF ASPECTS TO BE ASSESSED BY SPECIALISTS

Table 25 provides a description of the aspects to be assessed by the various specialists for the proposed project at the 2 Seam Mine.

Table 25: Description of aspects to be assessed by specialists

Specialist Study	Specialist appointed	Description
Soils and Land capability, including Agricultural Potential	Index (Pty) Ltd.	• The 2 Seam Mine area will be assessed using available desktop data. • The desktop survey will inform the most suitable options for the conveyor belt alignment. The three best possible options will be selected for detailed site assessment. • The assessment includes: o The site survey will be conducted by physical soil classification at a survey point every 150 m apart. The information, together with other data such as contours, will be used to classify the area into land capability classes following both the DAFF system as well as the guidelines outlined by the South African Chamber of Mines. o Six soil samples will be collected for soil analysis of basic soil fertility parameters and also to inform the soil monitoring recommendations. o The agricultural potential of the area will be determining using the baseline soil properties as well as climate data. The area will also be assessed for other agricultural production options such irrigated agriculture and livestock production. o The report will be compliant with the NEMA regulations for specialist studies as well as other legislation relevant to the fields of soil and agricultural potential. o For the impact assessment, a methodology recommended by Elemental Sustainability (Pty) Ltd will be used.
Archaeological and Cultural Heritage Impact Assessment	Mr. Tobias Coetzee	Phase 1 Heritage Impact Assessment (HIA) for the proposed mining right

Specialist Study	Specialist appointed	Description
Palaeontology Impact Assessment	Prof. Marion Bamford University of Witwatersrand	In order to determine the likelihood of fossils occurring in the affected area geological maps, literature, palaeontological databases and published and unpublished records must be consulted. If fossils are likely to occur then a site visit must be made by a qualified palaeontologist to locate and assess the fossils and their importance. Unique or rare fossils should either be collected (with the relevant SAHRA permit) and removed to a suitable storage and curation facility, for example a Museum or University palaeontology department or protected on site. Common fossils can be sacrificed if they are of minimal or no scientific importance but a representative collection could be made if deemed necessary.
Terrestrial Fauna and Flora (Biodiversity) Assessment (Plant and Animal Assessment)	Red Kite Environmental Solutions (Pty) Ltd	The terms of reference for the Vegetation Assessment will be as follows: • Describe the affected floristic environment from available literature and by means of a desktop study to identify a list of possible floral species that are likely to occur on site. • List and record endangered, red data and protected plant species found on site. • List exotic and invasive plant species found on site. • List plants found on site with medicinal properties • Identification of anticipated impact of the proposed project on the vegetation and ecosystem services. • Provide proposals for mitigation of identified impacts. Draw up a sensitivity map indicating all sensitive areas, transformed areas and buffers around sensitive features. The main objectives of the fauna study will be as follows: • To provide a description of the potentially affected fauna habitat by making use of available literature resources, and in so compiling a list of fauna species likely to occur on site; • To list and record endangered, red data or protected fauna species found or likely to occur on site; • To assess the condition of suitable habitat on site for sensitive fauna species;

Specialist Study	Specialist appointed	Description
		• To compile a sensitivity map indicating sensitive or non-sensitive or transformed areas and relevant buffer zones; • To identify anticipated impacts of the proposed development on fauna species; and To provide mitigation measures to limit and/or eliminate the anticipated impacts.
Aquatic Assessment, Surface Water Assessment, Wetland and Plant species	Limnology (Pty) Ltd.	The main objectives of wetland delineation study will be as follows: • Delineate and classify wetlands within 500m of the development site • Discusses drivers of wetlands • Groundtruthing of desktop data • Assessment of the PES or EIS scores and Recommended Ecological Category • The Risk Assessment based on the 2016 version of the Risk Matrix Tool presented in appendix A of the Risk-Based Water Use Authorisation Approach and Delegation Protocol for Section 21(c) and (i) • To identify anticipated impacts of the proposed development on wetlands; To provide mitigation measures to limit and/or eliminate the anticipated impacts. Aquatic Ecology will include the following: • A desktop review of available information for the project area, including satellite images, databases and specialist studies performed for the areas; • Identify impactable water resources, with their accompanying catchments, and sub-catchment areas as well as setting forth information on which measures and legislation will be applicable to the project; • A field visit to survey the affected watercourses; • If site conditions allow, two monitoring sites in the potentially affected rivers / streams will be assessed for the aquatic assessment, the following methodology will be used: o SASS5 (South African Scoring System version 5), o IHAS (Invertebrate Habitat Assessment system), and o Upstream and downstream water quality sampling (2 samples).

Specialist Study	Specialist appointed	Description
		• Determine or recommend ranges of acceptability for water quality for affected watercourses and compare to existing water quality monitoring data; • Describe riparian vegetation associated with identified surface water resources; • Determination of watercourse buffers as per Buffer Zone Guidelines for Wetlands, Rivers and Estuaries by Macfarlane and Bredin (2017); • Surface Water Assessment Report describing the affected surface water environment and condition; • NEMA 2014 impact assessment; • Developing a sensitivity map based on field visits and supported by appropriate regional information to inform the impact assessment; • Recommendation of site-specific mitigation measures; • Compilation of a specialist surface water and aquatic ecology assessment report for the development footprint and associated buffers detailing the methodology and findings of the assessments, in compliance with the procedures for assessment and reporting on aquatic biodiversity as per GN320 of 20 March 2020. For the water balance, the approach as contained in the Department of Water and Sanitation's "Best Practice Guideline G2: Water and Salt Balances", with the following Scope of Work to be undertaken: • Define water balance boundaries; • Identify water circuits and develop schematic flow diagram; • Data collection; • Solve water balance for identified units; and • Compile conceptual water balance report
Geohydrological Impact Assessment Model Update	GCS Water and Environmental Consultants (Pty) Ltd.	a. Hydrocensus: i. GCS proposes a field hydrocensus to obtain groundwater levels for the greater study area.

Specialist Study	Specialist appointed	Description
		— ii. Groundwater level data is the most important numerical model parameter, and more groundwater levels will improve model confidence. — iii. The budget is preserved for 5 water quality samples. — b. Geophysics: i. GCS proposes that the structural geology conceptualisation at the site be updated, via the application of a geophysical survey. GCS will also site future monitoring boreholes during this process. — c. Slug testing: i. GCS proposes that 3-4 slug tests be undertaken on new boreholes drilled at the mine, to update the geohydrological parameters (K, T and S values) for the mine. — **3. Monitoring network quantity and quality data review:** a. Confirm decant points and decant water quantity and quality for the 2-Seam (Pty) Ltd Vlaklaagte Mine workings. b. The mine foreman / environmental officer will be consulted to make sure that all data relevant to flooding and potential decant is noted and identified. c. Determination of the existence and extent of the pollution plume/mining zone of influence at 2-Seam (Pty) Ltd Vlaklaagte Mine. d. Determine the adequacy of the current groundwater monitoring network and propose new boreholes should this be required. **4. Numerical flow and transport modelling:** a. Update conceptual model for all the 2-Seam (Pty) Ltd Vlaklaagte Mine areas; b. Update numerical model grid and flow engine;

Specialist Study	Specialist appointed	Description
		c. Calibrate the numerical flow and transport model with all available data. a. Compile a report detailing the model update procedure, limitations and recommendations to improve mine water quality. b. Conduct necessary best practice scientific tests as required to ensure credible data and information is obtained as part of this numerical model update. c. Make recommendations on the short-term and long-term interventions that can be implemented to prevent or mitigate pollution or to further increased the confidence in the modelling work done. **5. Mapping and reporting:** a. Compile a report detailing the model update procedure, limitations and recommendations to improve mine water quality. b. Conduct necessary best practice scientific tests as required to ensure credible data and information is obtained as part of this numerical model update. c. Make recommendations on the short-term and long-term interventions that can be implemented to prevent or mitigate pollution or to further increased the confidence in the modelling work done.
Closure and Rehabilitation Plans (including Financial Provisioning) - GNR 1147	Elemental Sustainability (Pty) Ltd.	The financial provision for the proposed project will be determined by Elemental Sustainability and would be determined in accordance with the NEMA Regulations (1147 of 2015) pertaining to the financial provision for mining operations.
Hydropedological	Geo Pollution Technologies Gauteng (Pty) Ltd.	**Fieldwork** Fieldwork will be done to assess the current conditions of the site; **Conceptual modelling**

Specialist Study	Specialist appointed	Description
		Using existing monitoring data a conceptual model will be constructed with the aim of describing flow mechanisms and contaminant transport. **Flow modelling** A conceptual model will feed into a numerical flow model that will aim to quantify the unsaturated flow drivers of the different flow drivers. Please note that following will be required for the flow driver quantification: Wetland layouts and classifications; Geotecnical study; Ash dump layouts Surveyed topographical information Site access **Reporting** A report detailing the findings of the study will provided to client for comment before finalisation.
Stormwater Management Plan, for plant, tailings dam facility and Engineering Designs	GFK Consulting Engineers (Pty) Ltd.	Determination of floodlines for streams crossing the project area; Clean and dirty water separation berms; Preliminary Pollution Control Dam designs; Preliminary overburden, ROM and Stockpile pad designs; Preliminary domestic water and sewage disposal designs; Preliminary drawings for access control, fences and roads; and Preliminary design report for WULA.
Hydrology Assessment and Floodlines	GFK Consulting Engineers (Pty) Ltd.	
Geotechnical assessment	Luhlaza	Geotechnical assessment

14. PARTICULARS OF THE PUBLIC PARTICIPATION PROCESS WITH REGARDS TO THE IMPACT ASSESSMENT PROCESS THAT WILL BE CONDUCTED

14.1 STEPS TO BE TAKEN TO NOTIFY INTERESTED AND AFFECTED PARTIES

(These steps must include the steps that will be taken to ensure consultation with the affected parties identified in (h) (ii) herein)

During the Environmental Impact Assessment Phase, the following will be applicable:

- The draft EIAR will be made available for public review for 30 days. Registered I&APs will be notified of the availability of the draft EIAR. The report will be made available electronically via a downloadable link and a hard copy of the report will be made available at the mine.
- Copies of the EIAR will be submitted stakeholders (SAHRA and the Rustenburg Local Municipality), and government departments (DMRE and DWS) review.
- All comments received during the environmental impact assessment phase will be included as an Appendix in the Final EIAr to be submitted to the DMRE.

14.2 NEXT PHASES OF THE PUBLIC PARTICIPATION PROCESS

14.2.1 DETAILS OF THE ENGAGEMENT PROCESS TO BE FOLLOWED

(Describe the process to be undertaken to consult interested and affected parties including public meetings and one on one consultation. NB the affected parties must be specifically consulted regardless of whether or not they attended public meetings and records of such consultation will be required in the EIA at a later stage)

An advertisement, in English, will be placed in the local newspaper to advise I&APs of the availability of the Environmental Impact Assessment Report for review. Information in the advert will include a short project background (including project and applicant name), project location, nature of the activity, information regarding the availability of the report for review and contact details for the relevant EAP, where I&APs can send comments/concerns. Copies of all adverts will be included as Appendices in the Scoping Report, as well as the Environmental Impact Assessment Report.

Written notices will be provided to all landowners in and around the adjacent mining right area and to all registered I&APs. Written notices will also be sent to the municipality that has jurisdiction in the area and all organs of state (refer to Section 8.2.4) as preidentified and that have registered for the project. The written notice will advise where the EIAr can be accessed for review and contact details for the relevant EAP, where I&APs can send comments/concerns. Copies of all adverts will be included as Appendices in the Scoping Report, as well as the Environmental Impact Assessment Report.

SMS's will be sent to I&APs that have only provided a cellphone number. The SMS will advise where the report can be accessed and will include the contact details of the EAP.

It is proposed to hold a public open day to provide a further opportunity for I&APs to review available documentation for the project for the EIA phase of the project. Posters will be made available to provide information to I&APs and any questions can also be directed to the EAP. BIDs will be distributed and questions with regards to the project can be directed to the EAP.

Zoom or Skype, and/or phone calls with landowners and other I&AP's will be undertaken.

All issues raised and / or comments received will be included in the Public Participation Report, which will be updated for the EIAr to be submitted to the competent authority.

14.2.2 DESCRIPTION OF THE INFORMATION TO BE PROVIDED TO INTERESTED AND AFFECTED PARTIES

(Information to be provided must include the initial site plan and sufficient detail of the intended operation and the typical impacts of each activity, to enable them to assess what impact the activities will have on them or on the use of their land).

- The Environmental Impact Assessment Report will include the project description with the layout, a discussion of alternatives, and the findings of specialist studies and full assessment of all impacts of the alternatives, including cumulative impacts;
- The Environmental Management Programme will also be made available and include, *inter alia,* mitigation, management and monitoring measures to prevent and mitigate negative impacts and enhance positive impacts that have been identified in the EIA; roles and responsibilities and an environmental awareness plan.
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15. DESCRIPTION OF THE TASKS THAT WILL BE UNDERTAKEND DURING THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

A description of the tasks that would be undertaken during the EIA phase is provided below in Table *26*. A preliminary schedule for the EIA phase that aligns with regulatory timeframes is included below.

Table 26: EIA Tasks and Timing

Phase	**EAP activity**	**Opportunities for Consultation and Participation**		**Schedule ***
		Competent Authorities	**I&APs**	
Scoping Phase	Compile Scoping Report	-		June 2022
	Distribute Scoping Report for review	DWS	Review of EIA (30 days), Comments to EAP	24 June – 25 July 2022
	I&AP consultations	-	-	24 June – 25 July 2022
	Collate and respond to comments and finalise Scoping report	Provide final to DMRE	-	July 2022
Specialist studies	EAP to manage specialist activities and receive inputs for EIA.	-	-	July to August 2022
EIA Phase	Compile EIA report	-	-	August 2022

	Distribute EIA for review	Provide copy to DMRE for records	Review of EIA (30 days), Comments to EAP	September to October 2022
	I&AP consultations	-	Consultation with I&APs	
	Collate and respond to comments and finalise EIA report	-	-	November 2022
Competent authority review and decision making	EIA report to DMRE (106 days from acceptance of Scoping report).	DMRE Acknowledge Receipt of EIA (10 days).	Notify I&APs of final report submission	November 2022
		DMRE Review (107 days)		
		Environmental Authorisation Granted / Refused		March 2023
Decision	Notify registered I&APs of decision (within 14 days of date of decision)	-	-	March 2023
Appeal Phase	EAP to provide information on appeal process as and when required.	Consultation during processing of appeal if relevant.	Submit appeal in terms of National Appeal Regulations, 2014	March 2023

- **Approach to the EIA**

An Environmental Impact Assessment (EIA) is a good planning tool. It identifies the environmental impacts of a proposed development and assists in ensuring that a project will be environmentally acceptable and integrated into the surrounding environment in a sustainable way.

The EIA for this project will comply with the National Environmental Management Act (1998) (as amended) and the NEMA EIA Regulations (2014) [as amended] of the Department of Environmental Affairs and Forestry (DEAF). The guiding principles of an EIA are provided below.

- **Guiding principles for an EIA**

The EIA must take an open participatory approach throughout. This means that there should be no hidden agendas, no restrictions on the information collected during the process and an open-door policy by the proponent. Technical information must be communicated to stakeholders in a way that is understood by them and that enables them to meaningfully comment on the project.

There should be ongoing consultation with interested and affected parties representing all walks of life. Sufficient time for comment must be allowed. The opportunity for comment should be announced on an on-going basis. There should be opportunities for input by specialists and members of the public. Their contributions and issues should be considered when technical specialist studies are conducted and when decisions are made.

- **Information gathering**

Early in the EIA process, the Environmental Assessment Practitioner (EAP) identified the information that would be required for the impact assessment and the relevant data were obtained. In addition, available information about the receiving environment was gathered from reliable sources, interested and affected parties, previous documented studies in the area and previous EIA Reports. The project team then visited the site to gain first-hand information and an understanding of the existing operations and the proposed project.

- **Specialist Assessments**

Based on the impacts identified during the Scoping Phase, the following specialist studies have been identified to be completed and form part of the EIA. The main objective of the specialist studies is to provide independent scientifically sound information on issues of concern relating to the project proposal. The findings of the various specialist studies undertaken will be incorporated into the EIA Report. Any impacts that have not been identified during the scoping phase that have been identified and assessed by specialists will also be included in the environmental impact assessment.

- **Legislative Framework**

The legal requirements will be described and assessed in more detail.

- **Alternatives**

Current site alternatives and layouts and additional site and layout alternatives as identified by interested and affected parties, will further be assessed and a preferred alternative recommended.

- **Description and assessment of impacts identified during the scoping phase**

A comprehensive list of all impacts as identified by the EAP and the specialists, will be provided within the EIA report and assessed as per the methodology described in this report and plan of study.

- **Environmental management programme**

An Environmental Management Programme containing mitigation, management and monitoring measures and specifying roles and responsibilities will be compiled with specialist input.

- **Stakeholder engagement**

Registered I&APs, including relevant organs of state, will be consulted with during the EIA phase. All their comments will be formally responded to and incorporated into the EIA and the EIA report that will be submitted to the competent authority.

16. MEASURES TO AVOID, REVERSE, MITIGATE, OR MANAGE IDENTIFIED IMPACTS AND TO DETERMINE THE EXTENT OF THE RESIDUAL RISKS THAT NEED TO BE MANAGED AND MONITORED

Refer to Table *24* for the mitigation measures. It should be noted that this table has been compiled with the information on hand and would be refined during the EIA phase. Mitigation and management measures identified by all specialist during the EIA phase will be included in the EIA and EMPr.

17. OTHER INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

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:

17.1 IMPACT ON THE SOCIO-ECONOMIC CONDITIONS OF ANY DIRECTLY AFFECTED PERSON

(Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as Appendix 2.19.1 and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6.and 2.12. herein).

The mine has an existing Social and Labour Plan (SLP) which will continue to be implemented. Socio-economic impacts can be assessed based on the public consultation phase and all information related to the public consultation can be viewed within Section 8 within the Scoping Report and finalised as part of the final Scoping Report to be submitted to the CA.

17.2 IMPACT ON ANY NATIONAL ESTATE REFERRED TO IN SECTION 3(2) OF THE NATIONAL HERITAGE RESOURCES ACT

(Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) with the exception of the national estate contemplated in section 3(2)(i)(vi) and (vii) of that Act, attach the investigation report as Appendix 2.19.2 and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6.and 2.12.herein).

A heritage study will be conducted to identify potential impacts on heritage resources. The results of this study will be included in the EIAr and EMPr.

18. OTHER MATTERS REQUIRED IN TERMS OF SECTIONS 24 (4) (A) AND (B) OF THE ACT

(The EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24 (4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in sub-regulation 22(2)(h), exist. The EAP must attach such motivation as Appendix E).

No other matters are required in terms of Section 24(4)(A) and (B) of the act.

19. REASONED OPINION OF THE EAP

Based on the findings of the preliminary impact assessment during the scoping phase, the EAP is of the opinion that the scoping phase be approved, due to the positive social and economic impacts it can have on the local and regional communities. The potential negative impacts will be investigated in the EIA phase and mitigation measures for the impacts will be developed and included in the EMP.

20. UNDERTAKING BY THE EAP

I, Sonja van de Giessen, the Environmental Assessment Practitioner responsible for compiling this report, undertake that:

- the information provided herein is correct;
- the comments and inputs from stakeholders and I&APs have been correctly recorded, although due to the volume of comments and objections received from I&APs, it's possible that not all the information has been included;
- information and responses provided to stakeholders and I&APs by the EAP is correct to the best of Elemental Sustainability's knowledge at the time of compiling the report; and
- the level of agreement with I&APs and stakeholders has been correctly recorded and reported.

_____

Signature of the EAP

Date:

-END-

21. REFERENCES

2 Seam (Pty) Ltd. 2022. Mining Work Programme.

Crop Estimates Consortium, 2019. *Field crop boundary data layer (MP province)*, 2019. Pretoria. Department of Agriculture, Forestry and Fisheries.

Department of Agriculture, Forestry and Fisheries, 2017. *National land capability evaluation raster data: Land capability data layer*, 2017. Pretoria.

Elemental Sustainability (Pty) Ltd. 202. Integrated Water and Waste Management Plan for the proposed 2 SEAM Mining OC4 Operation and Stream Diversion, Mpumalanga Province.

Kruseman, G.P. and N.A. de Ridder, 1994. *Analysis and Evaluation of Pumping Test Data (2nd ed.)*, Publication 47, Intern. Inst. for Land Reclamation and Improvement, Wageningen, The Netherlands, 370p

Land Type Survey Staff (1972 – 2006). *Land Types of South Africa data set*. ARC – Institute for Soil, Climate and Water. Pretoria.

Mucina, L. & Rutherford, M. C. (2006). The vegetation of South Africa, Lesotho and Swaziland. (Strelitzia 19). South African National Biodiversity Institute. Pretoria.

Nel, J.L., Murray, K.M., Maherry, A. M., Petersen, C.P., Roux, D. J., Driver, A., Hill, L. van Deventer, H., Funke, N., Swartz, E. R., Smith-A Dao, L. B., Mbona, N., Downsborough, L. and Nienaber, S. (2011). *Technical Report for the National Freshwater Ecosystem Priority Areas*. (Report No. 1801/2/11). Water Research Commission.

SANS 10103: 2008.

South Africa (Republic) 2018. *Long-term grazing capacity for South Africa*: Data layer. Government Gazette Vol. 638, No. 41870. 31 August 2018. Regulation 10 of the Conservation of Agricultural Resources Act (CARA): Act 43 of 1983. Pretoria. Government Printing Works.

The Soil Classification Working Group (2018). *Soil Classification – Taxonomic System for South Africa.* Dept. of Agric., Pretoria.

Western Cape Department of Environmental Affairs & Development Planning (WC DEADP) Guideline on alternatives: EIA Guideline and Information Document Series (2011).

Western Cape Department of Environmental Affairs and Development Planning's (WC DEADP). *Guideline on Need and Desirability: EIA Guideline and Information Document Series* (2011).

Zyntha Consulting (Pty) Ltd. 2022. 2 Seam (Pty) Ltd – Quarterly Vlaklaagte Coal Mine Monitoring Report, January to March 2022 Project No.: A1253– Report No.: ZC_1340