DRAFT SCOPING REPORT FOR THE PROPOSED BIRMINGHAM MINING PROJECT, MPUMALANGA PROVINCE

Various portions of the farms Birmingham, Bloemfontein, Boschmanskraal, and Boschmansfontein, Nkangala District Municipality (DC31), Mpumalanga

DMR REF: MP30/5/1/2/2/10280MR

Elemental REF: Birmingham_2020_MR

October 2020

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].

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DOCUMENT HISTORY

Document Control, Quality Control and Disclaimer

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Client	Canyon Resources (Pty) Ltd.		
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Responsible person	Date	Position
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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 MINING RIGHT FOR BIRMINGHAM PROJECT, 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:	Canyon Resources (Pty) Ltd.
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FILE REFERENCE NUMBER SAMRAD: TBC
DMRE REFERENCE NUMBER: MP30/5/1/2/2/10280MR

EXECUTIVE SUMMARY

Elemental Sustainability (Pty) Ltd (ELEMENTAL) was appointed by Canyon Resources (Pty) Ltd (Canyon Resources) to undertake the environmental authorisation process in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) (as amended) and the National Environmental Management Waste Act, 2008 (Act 59 of 2008) for the proposed Birmingham Project.

The project is situated in the Steve Tshwete Local Municipality. The mine will be located on the remaining extent and portions 1, 3, 4, 7, 8 on the farm Boschmansfontein 182 IS; remaining extent and portions 1 and 2 of the farm Bloemfontein 196 IS, remaining extent and portions 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 15, 16, 17, 18 Boschmanskraal 184 IS and portions 1, 2, 3, 4 and 5 of the farm Birmingham 197 IS.

Based on the results obtained from the prospecting right (MP30/5/1/2/2/10280MR) conducted on the same pieces of land, Canyon Resources is proposing to apply for a mining right for the underground mining of coal. Infrastructure planned will include (but is not limited to) ventilation shafts, a powerline and substation, access roads / haul roads, workshops and offices, weighbridge, pollution control dam and stormwater management facilities, a sewage management system, a conveyor belt system (located on the border of portion 5 and 11 of the farm Boschmansfontein 182 IS and the remaining extent of Boschmansfontein 562 IS, the border of the remainder of portion 1 of the farm Boschmansfontein 182 and portion 8, portion 1, portion 18 and portion 2 of the farm Boschmanskraal 184 IS, the border of the remaining extent and portion 3 and portion 1 of Birmingham 197 IS), a processing plant, a discard dump and various stockpiles.

The mining area is easily accessible and the local infrastructure links the project area with inland market of South Africa and the Richards Bay Coal Terminal. The project area is located in close vicinity to the N11 freeway and the R542 road. The Hendrina Power Station lies 3.8 km north-west of the project.

Mining Right Area

Birmingham consists of two distinctly identifiable seams; the 4 lower and 2 lower seams. It is planned to mine these seams separately via underground methods using continuous miners. The expected mineable Run of Mine (ROM) product over life of mine is 47,234 Mt (after accounting for a 60% mining loss).

The following infrastructure is proposed for the Birmingham Project:

- Access / haul roads,
- Workshops,
- Offices,
- Weighbridge,
- Pollution Control Dam/s,
- Stormwater management facilities,
- Boreholes,

- Powerlines,
- Substation,
- Sewage management systems,
- Conveyor belt systems,
- Shaft complex,
- Lamp room,
- Ventilation Shafts;
- Processing plant; and
- Discard Dump.

Mining Schedule

The project life of mine ("LOM") is 27 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 coal mining project include:

- 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;
- Implementation of the proposed project will result in skills development associated with mining;
- It will contribute to the economic welfare of the surrounding community by creating employment 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; 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.

Canyon Resources has prepared and submitted a Social and Labour Plan (SLP) for the proposed Birmingham Mining Project, as part of the process for applying for a Mining Right as required of the Mining Charter and the Mineral and Petroleum Resources Development Act 28, 2002. The company's objectives for Birmingham's SLP is to provide socio-economic benefits for the target community, which includes the following:

- Promotion of employment and advance the social and economic welfare of all employees employed by Birmingham, as well as all relevant stakeholders of the communities within which Birmingham will operate;
- Contribute to the transformation of the mining industry and ensure that as the holder of the mining right we contribute towards the socio-economic development of the area where Birmingham will be located, including the major sending areas.

The financial contribution as per the SLP is as follows:

- Human resource development: R8 885 000; and
- Local economic development: R4 600 000.

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 underground mining were determined based on the prospecting results 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. On the 5 June 2020, the Department of Environment Forestry and Fisheries (DEFF) issued Directions GN650 in terms of the Disaster Management Act (Act 57 of 2002). As per the Directions, a Public Participation (PP) Plan is required for all public participation to be conducted in terms of the NEMA, which ensures that the EAP and Applicant will ensure that all reasonable measures are taken to identify potential I&APs for purposes of conducting public participation on the application; and ensure that, as far as is reasonably possible, taking into account the specific aspects of the application-

(a) information containing all relevant facts in respect of the application or proposed application is made available to potential I&APs; and

(b) participation by potential or registered I&APs has been facilitated in such a manner that all potential or registered I&APs are provided with a reasonable opportunity to comment on the application or proposed application.

A copy of the PP Plan is included in Appendix D1 of this report.

To date, the PPP has included notification of I&APs through distribution of a Background Information Document (BID) (Appendix D4), the placement of a newspaper advertisement (Appendix D5) and the placement of site notices (Appendix D2). A key aspect of public consultation is the notification of landowners, land occupiers and users within, and adjacent to, the application area (Appendix D3. As part of the PPP, an I&AP database has been developed for the project, as included in Appendix D1 of this report.

The Draft Scoping Report will be placed out for public review from 08 October 2020 to 06 November 2020. 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, from 08 October 2020 to 06 November 2020;
- 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 google drive link. The electronic link is: https://www.dropbox.com/sh/8fqkp61l1semwja/AACRdkrJ2lMF3onNggnarO-za?dl=0..
- Please send all comments to **sonja@elemental-s.co.za** **or** **dutoit@elemental-s.co.za** with the following reference (**Birmingham_2020_MR**).

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 Birmingham Mining Project the following specialist studies will be completed:

- Air Quality;
- Wetland Delineation Study;
- Blasting and Vibration Assessment;

- Heritage Assessment;
- Hydrogeological Assessment (including Hydropedological Assessment);
- Hydrological Assessment (including water balance);
- Noise Study;
- Ecological Assessment;
- Geotechnical Assessment;
- Storm Water Management Plan (including floodlines and topography);
- Social Impact Study;
- Soils, Land Use and Capability and Agricultural Impact Study;
- Traffic Impact Assessment;
- Waste Assessment; 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 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.

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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)
DHSWS	Department of Human Settlements, Water and Sanitation
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
STLM	Steve Tshwete Local Municipality
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 Canyon Resources (Pty) Ltd (Canyon Resources) to undertake the environmental authorisation process in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) (as amended) and the National Environmental Management Waste Act, 2008 (Act 59 of 2008) for the proposed Birmingham Mining Project (Birmingham).

The project is situated in the Steve Tshwete Local Municipality and the Nkangala District Municipality. The mine will be located on remaining extent (portion 0) and portions 1, 3, 4, 7, 8 of the farm Boschmansfontein 182 IS; remaining extent (portion 0)and portions 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 15, 16, 17, 18 of the farm Boschmanskraal 184 IS; remaining extent (portion 0) and portions 1 and 2 of the farm Bloemfontein 196 IS and portions 1, 2, 3, 4 and 5 of the farm Birmingham 197 IS.

Birmingham, located on the abovementioned farms, lies approximately 6km north-west of Hendrina, Mpumalanga. Based on the results obtained from the prospecting right conducted on the same portions of land, Canyon Resources is proposing to apply for a mining right for the underground mining of coal. Infrastructure planned will include (but is not limited to) ventilation shafts, a powerline and substation, access roads / haul roads, workshops and office, weighbridge, pollution control dam and stormwater management facilities, a sewage management system, processing plant, a conveyor belt system (located on the border of Portion 5 and 11 of the farm Boschmansfontein 182 IS and the remaining extent of Boschmansfontein 562 IS, the border of the remainder of portion 1 of the farm Boschmansfontein 182 and portion 8, portion 1, portion 18 and portion 2 of the farm Boschmanskraal 184 IS, the border of the remaining extent and portion 3 and portion 1 of Birmingham 197 IS), a discard dump and various stockpiles.

The mining area is easily accessible and the local infrastructure links the project area with inland market of South Africa and the Richards Bay Coal Terminal. The project area is located in close vicinity to the N11 freeway and the R542 road. The Hendrina Power Station lies 3.8 km north-west of the project. The proposed location of the Birmingham project area is presented in Figure 1.

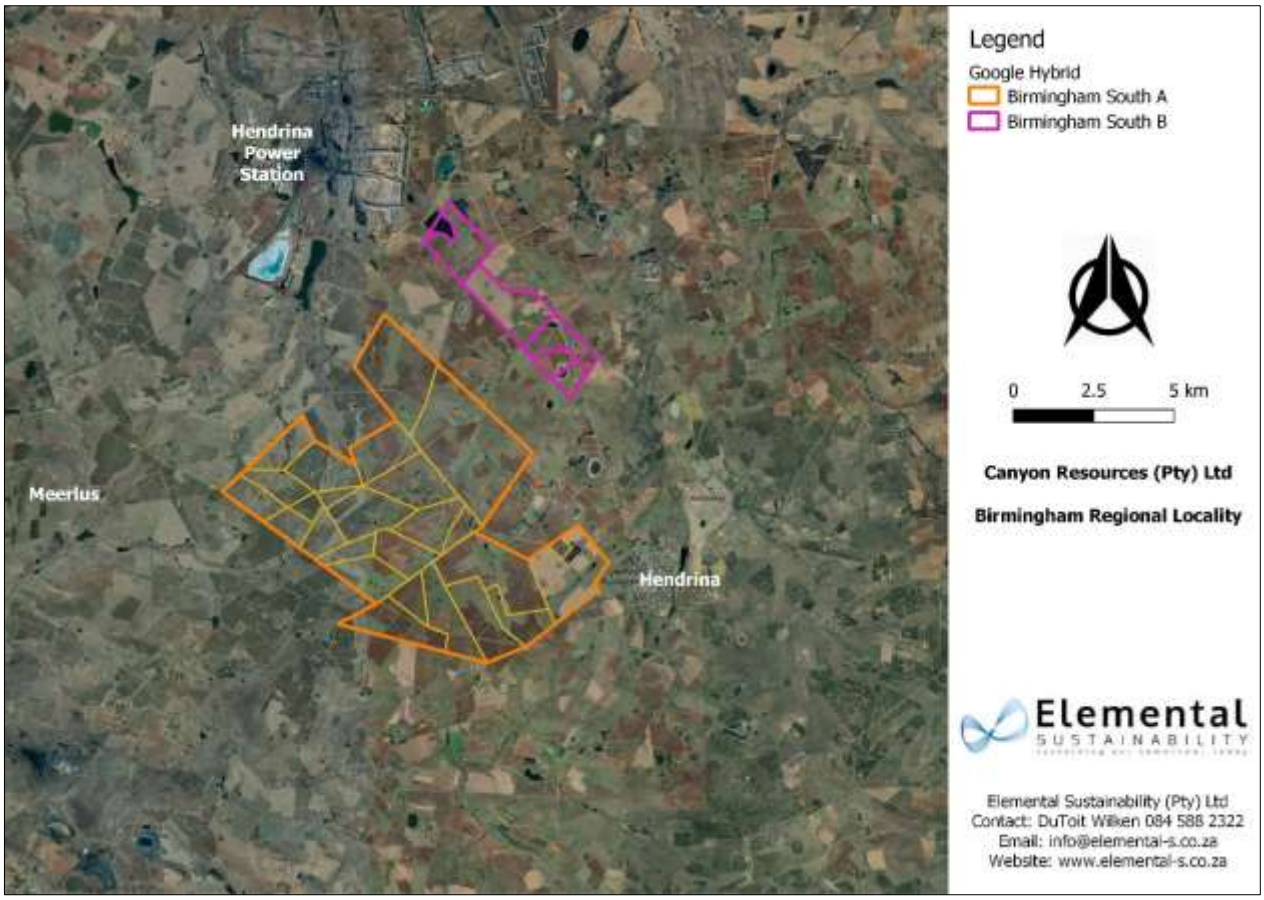

Figure 1: The location of the Birmingham Project Mining Right Area

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 by GN No. 327, 325 and 324 of 7 April 2017, respectively. The EIA regulations applicable in this study, are the EIA Regulations, 2014 published in GN No. 982 of 4 December 2014 and amended by GN No. 326 of 7 April 2017.
- 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 Human Settlements, Water and Sanitation (DHSWS) 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 5) of this report. A mining right application in terms of the MPRDA and an integrated NEMA and NEM:WA application has been lodged with the DMRE. The WUL application will be submitted to the DHSWS.

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 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 to 0
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 Section10 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 19 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 by GNR326 (2017), 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:

- Air Quality;
- Wetland Delineation Study;
- Blasting and Vibration Assessment;
- Heritage Assessment;
- Hydrogeological Assessment (including Hydropedological Assessment);
- Hydrological Assessment (including water balance);
- Noise Study;
- Ecological Assessment;
- Geotechnical Assessment;
- Storm Water Management Plan (including floodlines and topography);
- Social Impact Study;
- Soils, Land Use and Capability and Agricultural Impact Study;
- Traffic Impact Assessment;
- Waste Assessment; and

- Closure Plan and Quantum Report.

In line with NEMA GNR 982 as amended by GNR 326 (2017), 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

The Birmingham Mining Project (Birmingham) is situated in the Mpumalanga province, about 17km south-east of Middelburg and 6km north-west of Hendrina in the Steve Tshwete Local Municipality. The project comprises of a prospecting right (MP 30/5//1/1/2/1182 PR), remaining extent (portion 0) and portions 1, 3, 4, 7, 8 of the farm Boschmansfontein 182 IS; remaining extent (portion 0)and portions 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 15, 16, 17, 18 of the farm Boschmanskraal 184 IS; remaining extent (portion 0) and portions 1 and 2 of the farm Bloemfontein 196 IS and portions 1, 2, 3, 4 and 5 of the farm Birmingham 197 IS. (Refer to Table 4 below). A conveyor belt system will be located on the border of Portion 5 and 11 of the farm Boschmansfontein 182 IS and the remaining extent of Boschmansfontein 562 IS, the border of the remainder of portion 1 of the farm Boschmansfontein 182 and portion 8, portion 1, portion 18 and portion 2 of the farm Boschmanskraal 184 IS, the border of the remaining extent and portion 3 and portion 1 of Birmingham 197 IS.

Table 4: Description of the property

Name:	Birmingham Mining Project	
Application area (Ha)	6895.71ha	
Magisterial district:	Steve Tshwete Local Municipality Nkangala District Municipality	
Distance and direction from nearest town	17km south east Middelburg 6 km north-west of the town of Hendrina	
21-digit Surveyor General Code for each farm portion	Birmingham 197 IS – Portion 1	T0IS00000000019700001
	Birmingham 197 IS Portion 2	T0IS00000000019700002
	Birmingham 197 IS Portion 3	T0IS00000000019700003
	Birmingham 197 IS Portion 4	T0IS00000000019700004
	Birmingham 197 IS Portion 5	T0IS00000000019700005
	Bloemfontein 196 IS Remaining Extent	T0IS00000000019600000
	Bloemfontein 196 IS Portion 1	T0IS00000000019600001
	Bloemfontein 196 IS Portion 2	T0IS00000000019600002
	Boschmansfontein 182 IS Remaining Extent	T0IS00000000018200000
	Boschmansfontein 182 IS Portion 1	T0IS00000000018200001
	Boschmansfontein 182 IS Portion 3	T0IS00000000018200003
	Boschmansfontein 182 IS Portion 4	T0IS00000000018200004
	Boschmansfontein 182 IS Portion 7	T0IS00000000018200007
	Boschmansfontein 182 IS Portion 8	T0IS00000000018200008

	Boschmanskraal 184 IS Remaining Extent	T0IS00000000018400000
	Boschmanskraal 184 IS Portion 1	T0IS00000000018400001
	Boschmanskraal 184 IS Portion 2	T0IS00000000018400002
	Boschmanskraal 184 IS Portion 3	T0IS00000000018400003
	Boschmanskraal 184 IS Portion 4	T0IS00000000018400004
	Boschmanskraal 184 IS Portion 5	T0IS00000000018400005
	Boschmanskraal 184 IS Portion 6	T0IS00000000018400006
	Boschmanskraal 184 IS Portion 8	T0IS00000000018400008
	Boschmanskraal 184 IS Portion 9	T0IS00000000018400009
	Boschmanskraal 184 IS Portion 10	T0IS00000000184000010
	Boschmanskraal 184 IS Portion 11	T0IS00000000184000011
	Boschmanskraal 184 IS Portion 12	T0IS00000000184000012
	Boschmanskraal 184 IS Portion 15	T0IS00000000184000015
	Boschmanskraal 184 IS Portion 16	T0IS00000000184000016
	Boschmanskraal 184 IS Portion 17	T0IS00000000184000017
	Boschmanskraal 184 IS Portion 18	T0IS00000000184000018
	Portions on which the Conveyor Belt will be located on that are not included above	
	Boschmansfontein 182 IS Portion 5	T0IS00000000018200005
	Boschmansfontein 182 IS Portion 11	T0IS00000000018200011
	Boschmansfontein 562 IS Remaining Extent	T0IS00000000056200000
	Birmingham 197 S Remaining Extent	T0IS00000000019700000

2.4 LOCALITY MAP

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

Figure 2 indicates the location of the proposed project. The locality map is also appended in Appendix B.

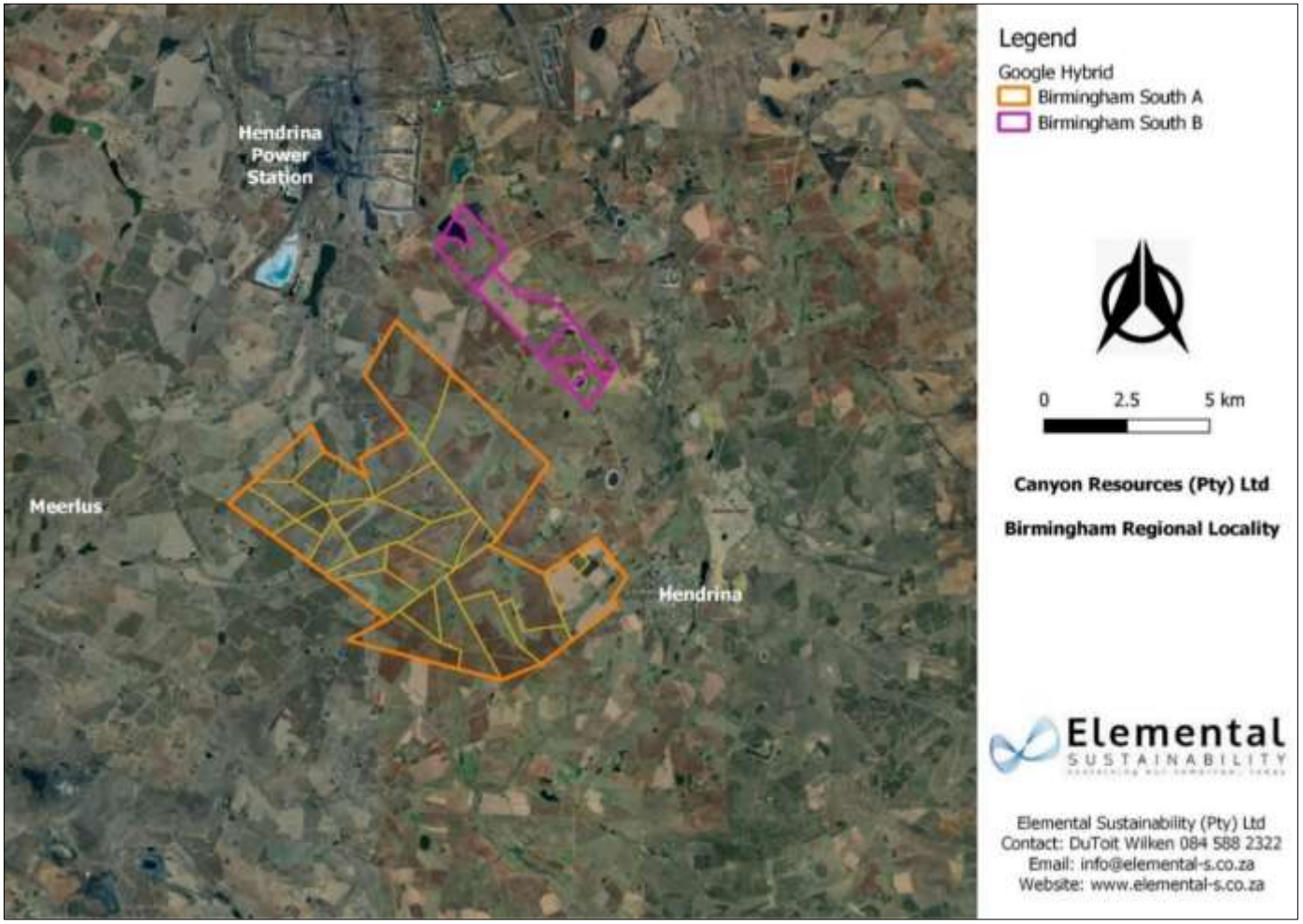

Figure 2: Locality of the Birmingham Mining Project

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 5 provides the listed and specified activities that are applicable to the Birmingham Mining Project (Birmingham). Table 6 provides a description of the EIA Listed Activities. Also refer to the layout plans included in Appendix C.

Table 5: Listed and specified activities

NAME OF ACTIVITY	AERIAL EXTENT OF THE ACTIVITY	LISTED ACTIVITY	APPLICABLE LISTING NOTICE	WASTE MANAGEMENT AUHTORISATION
***(E.g. For prospecting to** drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **E.g. for mining**, to excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)*	*Ha or m²*	*Mark with an X where applicable or affected*	*(GNR 327, GNR 325 or GNR 324) of 7 April 2017*	*(Indicate whether an authorisation is required in terms of the Waste Management Act).* ***(Mark with an X)***
Mine support infrastructure will include pipelines for potable water, storm water and dewatering underground mine workings	To be confirmed in EIAR	X	GNR 327, Listing Notice 1: Activity 9	-
Mine support infrastructure may include pipelines for transportation of sewage and for water from pollution control dams.	To be confirmed in EIAR	X	GNR 327, Listing Notice 1: Activity 10	
Substation and power transmission	0.7ha and <1ha cumulative for pylons	X	GNR 327 – Listing Notice 1: Activity 11 (i)	
Water supply and storage (potable & process)	Process water: 1ha for 2300m^3/day Potable water: <1ha for 40m^3/day	X	GNR 327, Listing Notice 1: Activity 13	
Rehabilitation, including closing of shafts	80 ha	X	GNR.327, Listing Notice 1: Activity 22	Category B: 10, 11
Access and hauling along roads	5000m x 13m	X	GNR 327, Listing Notice 1: Activity 24	
Ablutions & change house with sewage treatment plants	0.6 ha	X	GNR.327, Listing Notice 1: Activity 25	

NAME OF ACTIVITY	AERIAL EXTENT OF THE ACTIVITY	LISTED ACTIVITY	APPLICABLE LISTING NOTICE	WASTE MANAGEMENT AUHTORISATION
Mining Infrastructure (including offices, workshops and related infrastructure)	<1ha	X	GNR.327, Listing Notice 1: Activity 28	
Mining Infrastructure (including offices, workshops, conveyor belt, and related infrastructure)	<1ha	X	GNR.327, Listing Notice 1: Activity 30	
Fuel Storage	More than 0.2ha /500 m^3	X	GNR 325, Listing Notice 2: Activity 4	
Licenses and permits	-	X	GNR.325, Listing Notice 2: Activity 6	
Topsoil & subsoil stripping & stockpiling into berms	80 ha	X	GNR 325, Listing Notice 2: Activity 15	
Underground mining	Mineral Boundary: 1995.45ha	X	GNR 325 Listing Notice 2: Activity 17	
Processing Plant	68 m^2	X	GNR 325, Listing Notice 2: Activity 19	
Access roads	To be confirmed in EIA phase	X	GNR 324 Listing Notice 3: Activity 4	
Fuel Storage to be determined by specialist inputs	More than 0.2ha /500 m^3	X	GNR 324 Listing Notice 3: Activity 10	
Overburden Stockpiles	1.5ha	X	GN 633 (10),(11) GN 633 (7)	GN 633 (11) GN 633 (7)
Discard Dump	5ha	X	GN 633 (11) GN 633 (7)	GN 633 (11) GN 633 (7)
Waste Rock; Stockpiles, ROM Stockpiles; and Waste residue Deposits.	To be confirmed in EIAR	X	GN 633(13) Residue stockpile[1] in terms of GN 632 (2015)	GN 633(13) Residue stockpile[1] in terms of GN 632 (2015)

Table 6: Description of the EIA Regulations Listed Activities

Legislation	Listed activities	Applicability of the activity	Competent Authority
NEMA and the EIA Regulations, 2014, as amended (7 April 2017)	**GN 325 - Listing Notice 1:** • Listing Notice 1 - Activity 9: Storm water management structures, pipelines, berms and water resources diversions. *The development of infrastructure exceeding 1000 m in length for the bulk transportation of water and storm water- (i) with an internal diameter of 0,36 meters or more; or (ii) with a peak throughput of 120 litres per second or more.* Infrastructure will include pipelines for portable water, storm water and dewatering of underground mine.	Mining Right Application	DMRE – Mpumalanga Province

Legislation	Listed activities	Applicability of the activity	Competent Authority
	• Listing Notice 1 – Activity 10: Transportation of process water or waste water or return water to the PCD *The development and related operation of infrastructure exceeding 1000 m in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes- (i) with an internal diameter of 0,36 meters or more; or (ii) with a peak throughput of 120 litres per second or more.* Mine infrastructure to include pipelines for transportation of water to the pollution control dam. • Listing Notice 1 – Activity 11: Sub-station and electricity *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 275kilovolts.* The use of electricity at the plant area may require the development of a substation. • Listing Notice 1 – Activity 13: Establishment and/or use of Dams or reservoirs with a capacity of 50 000 cubic meters or more *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 meters or more, unless such storage falls within the ambit of activity 16 in Listing Notice 2 of 2014*. • Listing Notice 1 – Activity 22 Rehabilitation, including the closing of the shafts *The decommissioning of any activity requiring –* *(i) a closure certificate in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002); or (ii) a prospecting right, mining right, mining permit, production right or exploration right, where the throughput of the activity has reduced by 90% or more over a period of 5 years excluding where the competent authority has in writing agreed that such reduction in throughput does not constitute* *closure; but excluding the decommissioning of an activity relating to the secondary processing of a –* (a) *mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource; or petroleum resource, including the refining of gas, beneficiation, oil or petroleum products; – in which case activity 31 in this Notice applies.* • Listing Notice 1 – Activity 24 Access and haul roads *The development of a road- (ii) with a reserve wider than 13,5meters, or where no reserve exists, the road is wider than 8 meters*. • Listing Notice 1 – Activity 25 Ablutions & change house with sewage treatment plants *The development and related operation of facilities or infrastructure for the treatment of effluent, wastewater or sewage with a daily throughput*		

Legislation	Listed activities	Applicability of the activity	Competent Authority
	capacity of more than 2 000 cubic metres but less than 15 000 cubic metres. • Listing Notice 1 – Activity 28 Activity within an agricultural area as the Mining Infrastructure (including offices, workshops and related infrastructure) may trigger this. *Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:* *(i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or* *(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;* *excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes*. • Listing Notice 1 – Activity 30 Activity within a Threatened Ecosystem *Any process or activity identified in terms of section 53(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).*		
	GNR 327 - Listing Notice 2: • Listing Notice 2 – Activity 4 Bulk hydrocarbon storage facilities *The development and related operation of facilities or infrastructure for the storage, or storage and handling of dangerous goods, where such storage occur in containers with a combined capacity of more than 500 cubic meters* • Listing Notice 2 – Activity 6 Activities triggering a water use license application and other licenses and permits. *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, excluding (i) activities which are identified and included in Listing Notice 1 of 2014; (ii) activities which are included in the list of waste management activities published in terms of section 19 of the NEM: WA 59 of 2008.* This mining operation will require A Water Use License under the National Water Act • Listing Notice 2 – Activity 15 Topsoil & subsoil stripping and stockpiling into berms. *The clearance of an area of 20 hectares or more of indigenous vegetation, excluding 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* • Listing Notice 2 – Activity 17 Mining Right required for extraction of coal by underground mining including Crushing and Screening, and any other extraction and / or primary processing of a mineral.		

Legislation	Listed activities	Applicability of the activity	Competent Authority
	Any activity including the operation of that activity which requires a mining right as contemplated in Section 22 of the Mineral and Petroleum Resources Development Act, 2002 (Act no. 28 of 2002), including- (a) associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resources; or the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing; but excluding the secondary processing of a mineral. • Listing Notice 2 – Activity 19 *The removal and disposal of minerals contemplated in terms of section 20 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including—* *(a) associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource **[,]** ; or* *(b) **[including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)]** the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing; but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in this Notice applies.*		
	GNR 324: Listing Notice 3: • Listing Notice 3 – Activity 4 Road development in Mpumalanga within sensitive areas *The development of a road wider than 4 metres with a reserve less than 13,5 metres* • Listing Notice 3 – Activity 10 Bulk storage of hydrocarbon storage facilities outside urban areas within sensitive areas *The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres.*		
	Waste License Activities Triggered: • GNR921 as amended by GN633: Category B – Activity 7 Disposal of coal containing overburden to land *The disposal of any quantity of hazardous waste to land. Note that mine residues are classified as hazardous in terms of the National Environment Management: Waste Amendment Act of 2014.* • GNR921 as amended by GN633: Category B – Activity 10 The disposal of general waste to land covering an area of more than 50m^2 but less then 200m^2 and with a total capacity not exceeding 25000 tons. • GNR 921 as amended by GN633: Category B – Activity 11		

Legislation	Listed activities	Applicability of the activity	Competent Authority
	Waste residue stockpiles establishment *Establishment or reclamation of a residue stockpile or residue deposit resulting from activities which requires a mining right under the MPRDA.*		
Legislation	**Listed activities**	**Applicability of the activity**	**Competent Authority**
NWA Section 21 Water Uses	Water Use Activities Triggered: • Section 21a: Taking water from a water resource • Section 21b: Storing water • 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 a watercourse • Section 21 j: Removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people.	Water Use Licence	Department of Human Settlements Water and Sanitation (DHSWS)

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 project description. The aim of the project description is to indicate the activities that are planned to take place at the proposed project area, and 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

The proposed Birmingham Mining Project (Birmingham) is located approximately 17km south east of Middelburg and 6 km north-west of the town of Hendrina in the Mpumalanga Province. Access to the project area can be reached by means of the R38 and N11 tarred provincial roads. The siding that will be used for transportation of coal is Rietkuil or a newly developed facility. The mine will use the siding facilities to transport product to the Richards Bay Coal Terminal (RBCT). The proposed mine plan for the Birmingham is provided in Figure 3. Figure 12 to Figure 14 indicate the infrastructure layout plans for the northern, central and southern sections of the project. Following specialist studies to be undertaken for the EIA phase, and public participation with landowners, Interested and Affected Parties (I&APs) and any other stakeholders, the location of the proposed surface infrastructure may move to other locations. The final surface infrastructure layout will, therefore, be provided in the Environmental Impact Assessment Report (EIAr).

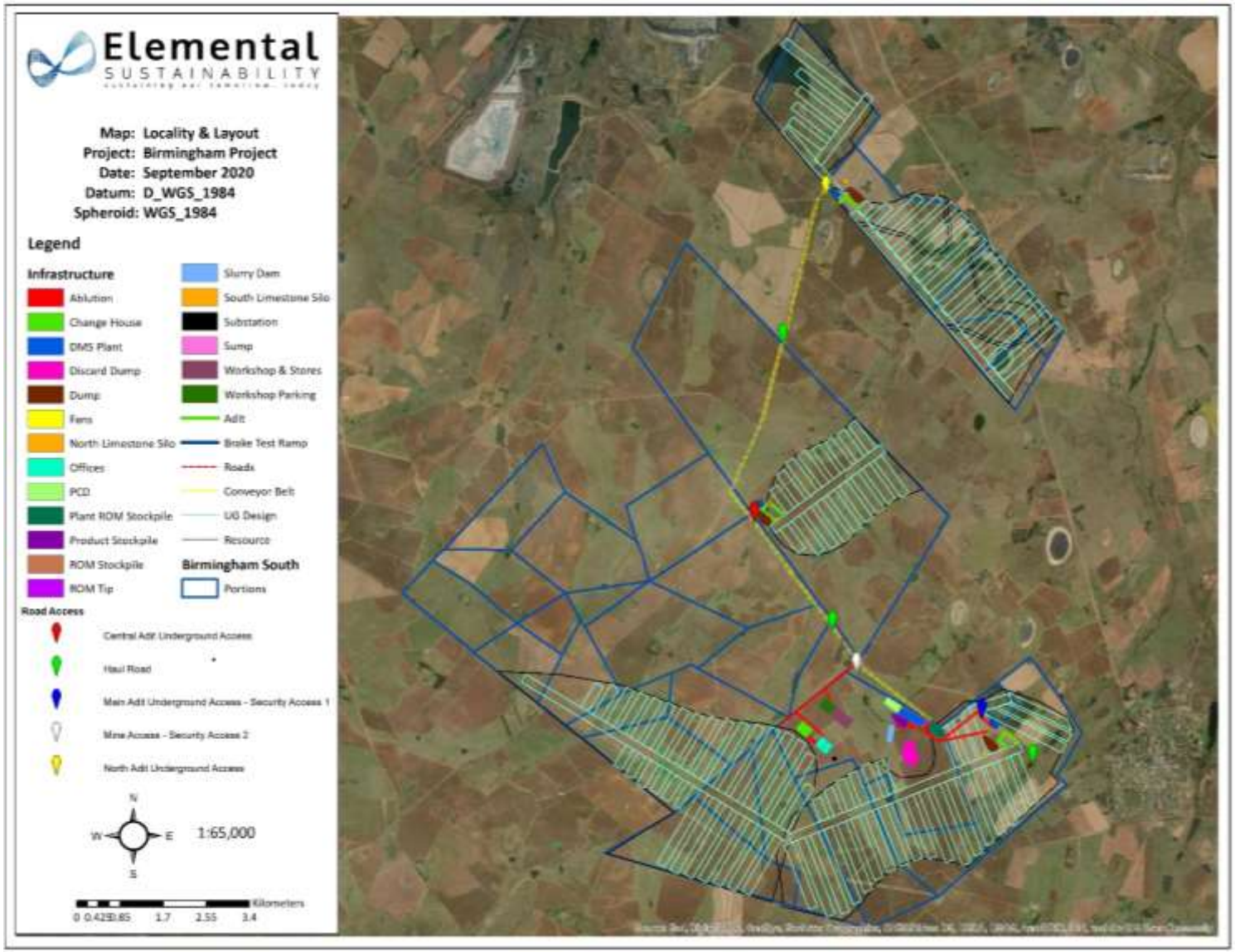

Figure 3: Proposed layout plan for the Birmingham Mining Project

3.2.2 THE MINERAL RESOURCE

Exploration drilling was conducted for the Birmingham Mining Project. The exploration included the drilling of 24 boreholes conducted by Canyon Resources, 102 boreholes from the CGS and 91 boreholes from other sources. Logging and sampling of the coal intersections were conducted. The coal samples were submitted for analyses at a SANAS accredited coal laboratory, namely Noko Analytical Services (Pty) Ltd. Based on this information, the coal deposit is characterised as bituminous coal, with burnt coal close to dolerite sills and dykes.

Birmingham consists of two distinctly identifiable seams, namely the 4 lower and 2 lower seams. It is planned to mine these seams separately via underground methods using continuous miners. The expected mineable ROM product over life of mine is 47,234 Mt (after accounting for a 60% mining loss).

Table 7 indicates the ROM tonnages and qualities as determined in the resource report compiled by Sumsare Consulting.

Table 7: Resource Report compiled by Sumsare Consulting dated February 2020

Seams	GTIS (Mt)	TTIS (30% GL)	MTIS (5% ML)	ROM (Mt)	GCV ad (MJ/kg)	IM (%)	ASH (%)	VOLS (%)	S (%)
S4L	39,189	27,432	26,062	14,254	21.05	3.05	29.5	24.7	1.52
S2L	79,902	57,766	54,876	32,980	22.47	3.2	32.8	18.6	1.43
	119,091	85,198	80,938	47,234	20.79	3.1	32.1	19.4	1.46

Table 8 indicates the expected product tonnages and qualities as determined in the resource report compiled by Sumsare Consulting.

Table 8: Expected product tonnages and qualities as per Resource Report by Sumsare Consulting (February 2020)

Seams	ROM (Mt)	Theoretical Yield (%)	Saleable Product (Mt)	Product CV (MJ/kg)	IM (%)	ASH (%)	VOLS (%)	S (%)
S4L	14,254	63.8%	9,101	24.80	3.4	19.8	28.2	1.08
S2L	32,980	69.2%	22,841	24.80	3.3	22.1	22.7	0.99
	47,232	67.6%	31,943	24.80	3.3	20.6	22.5	1.01

3.2.3 MINERAL RESOURCE MAPS

The mining area comprises of 9 distinct resource blocks with most continuity located towards the east. Refer to the resource maps in Figure 4 as provided for in the resource statement compiled by Sumsare Consulting, 2020.

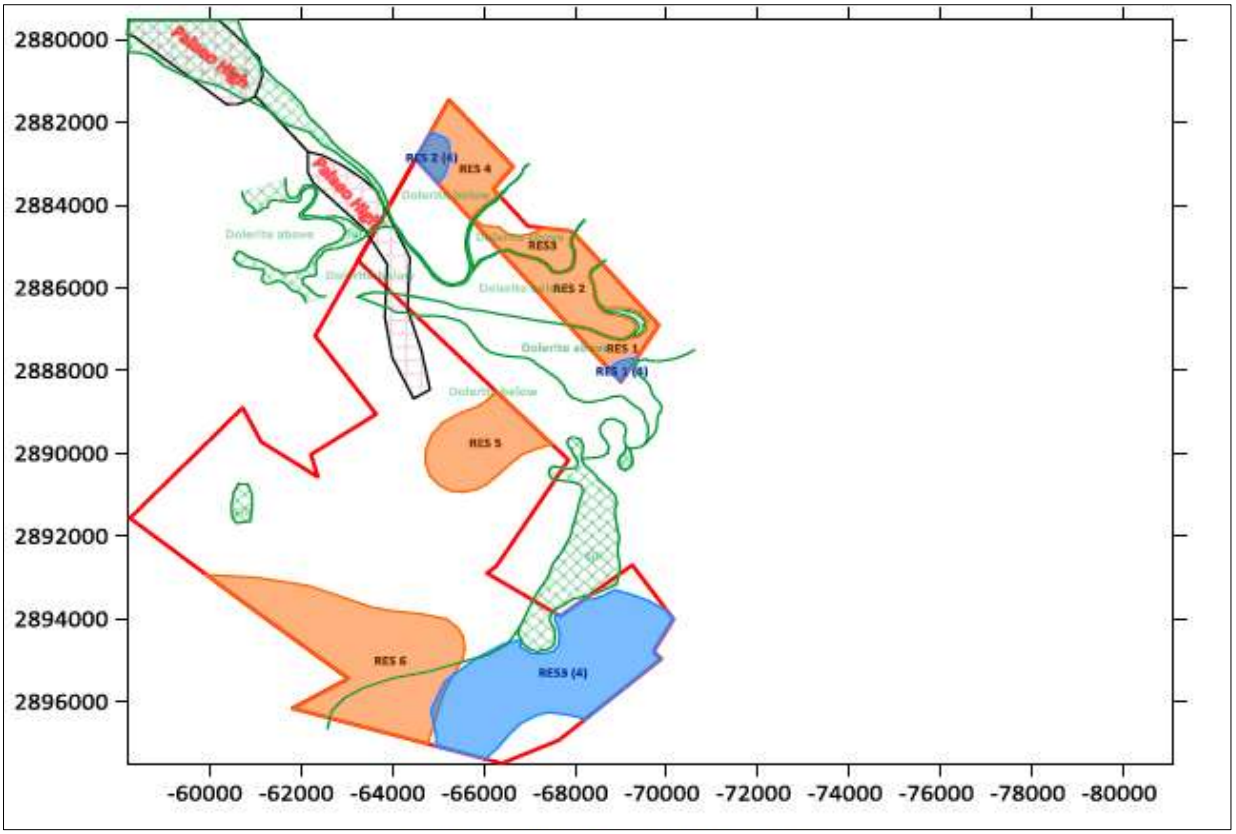

Figure 4: S4 and S2 Resource Blocks

The thickness of the No. 4 LOWER SEAM (S4L) varies considerably across the property from 0.5m to 3m. In the South the seam was affected by dolerite intrusions. Refer to Figure 5.

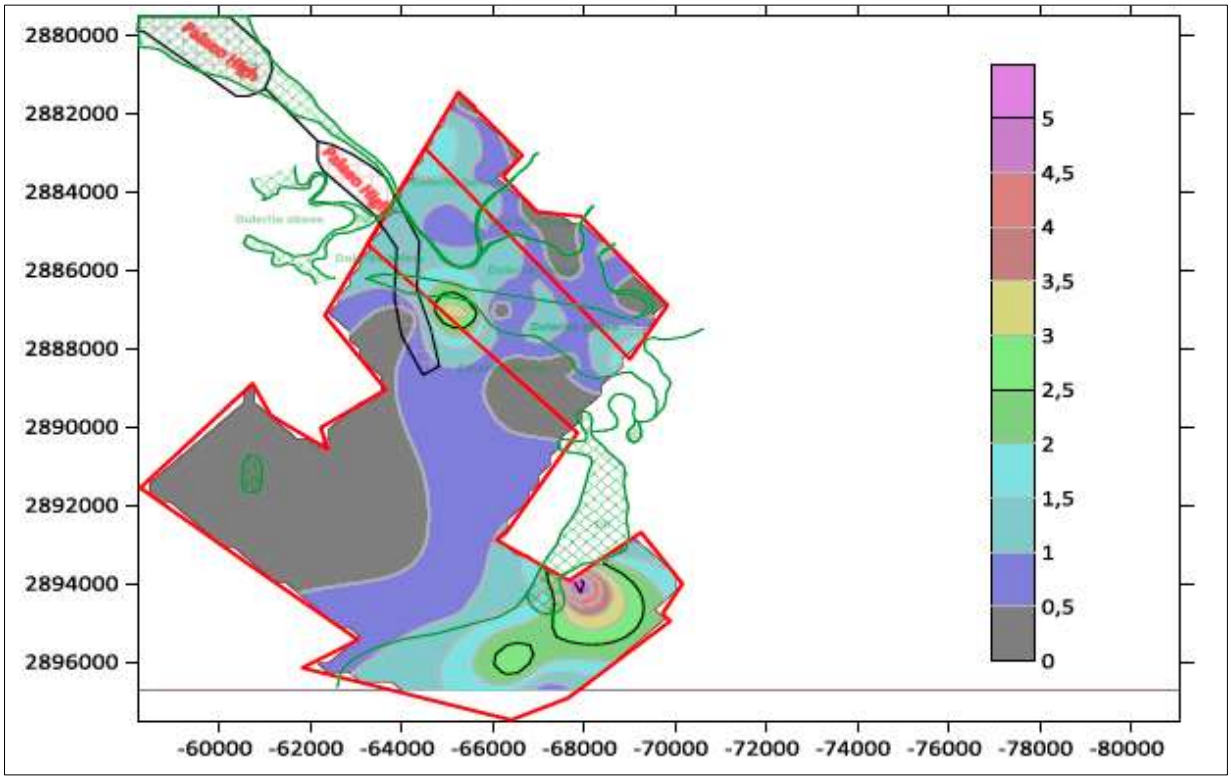

Figure 5:S4LSeam thickness

The depth of the roof of the seam varies considerably across the property (Figure 6). The deepest areas exist to the south east where the overburden is greater than 120m.

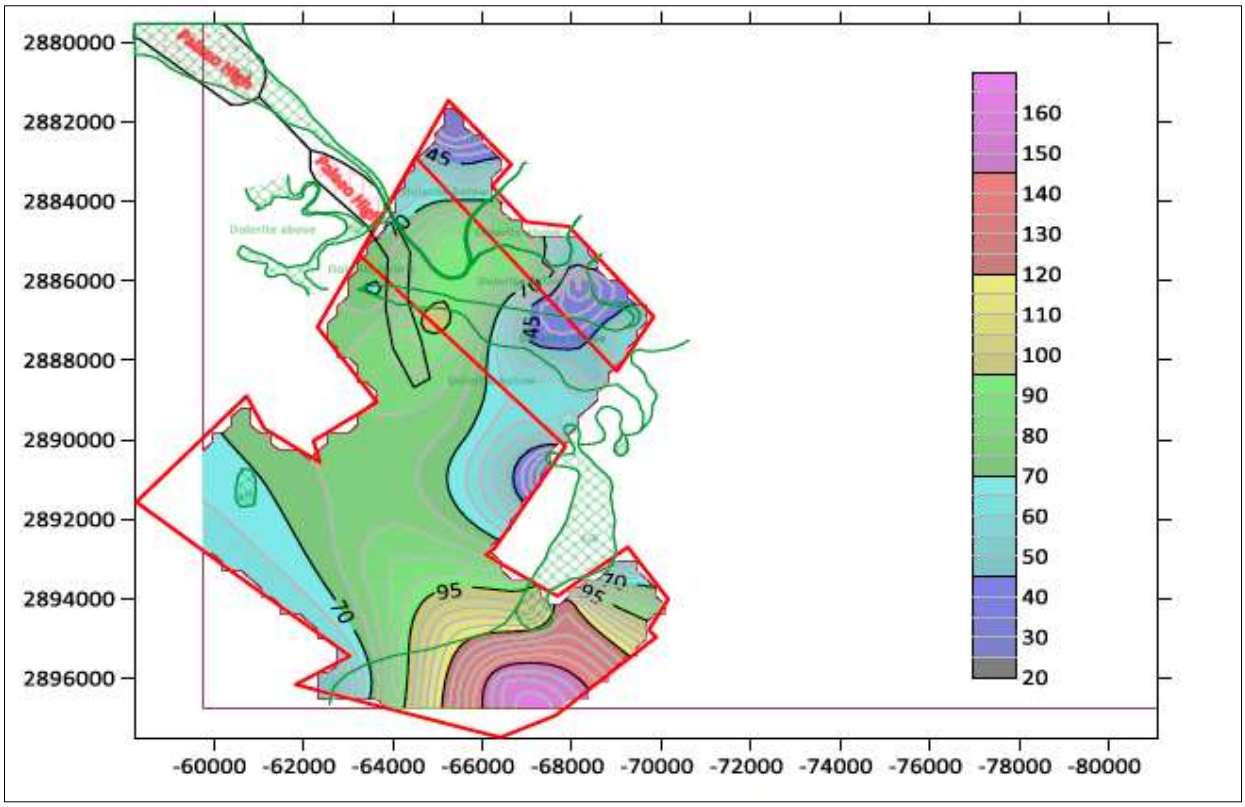

Figure 6: S4 Lower Roof Elevation

S4L shows the areas of low seam elevation which correspond to a palaeo-valley, higher elevations are found on the flanks of the palaeo-highs. The resource dips towards the south East of the area, the floor elevation is shown in Figure 7.

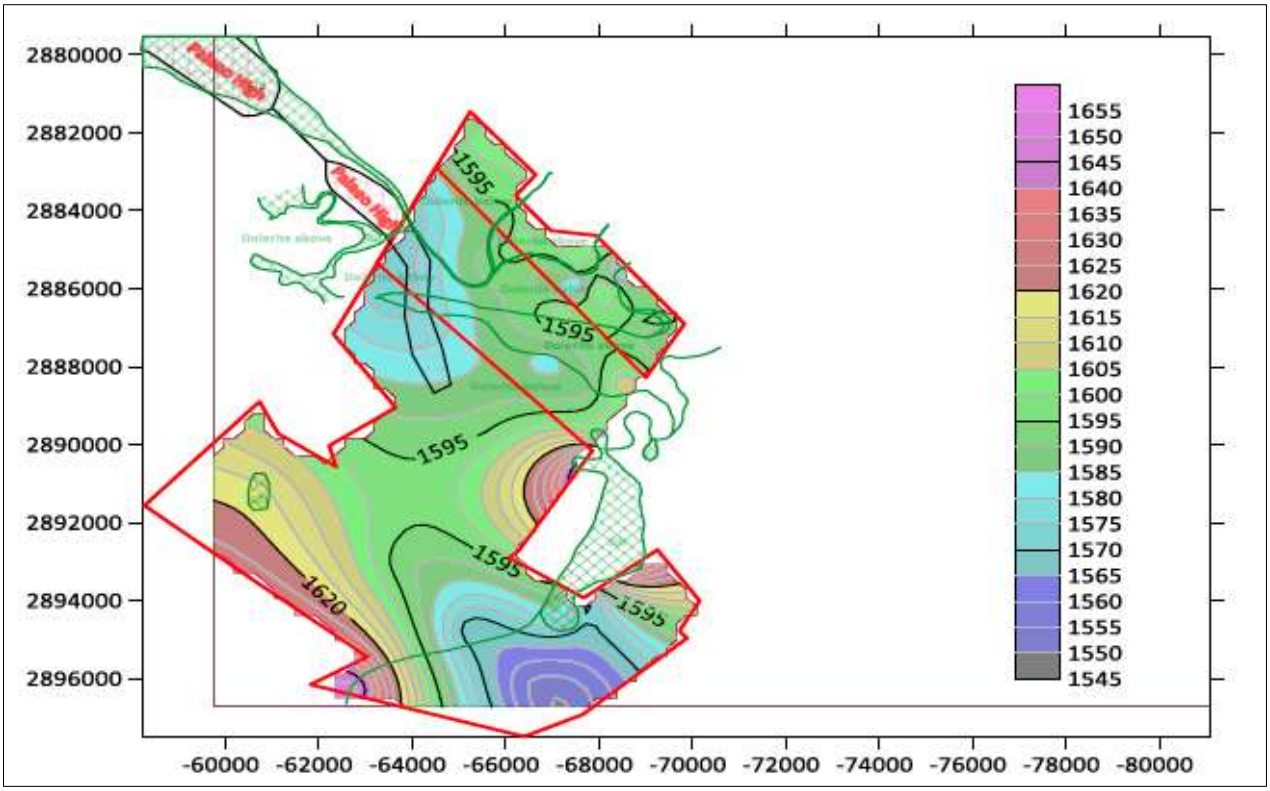

Figure 7: S4 Lower Floor Elevation

The thickness distribution and characteristics of NO. 2 LOWER SEAM (S2L) (*Figure 8*) is a function of the geometry of the dispositional surface and the rate at which the surface subsided during the peat accumulation. The thickness of the S2L ranges from a minimum 1.5m and a maximum of 4.5m.

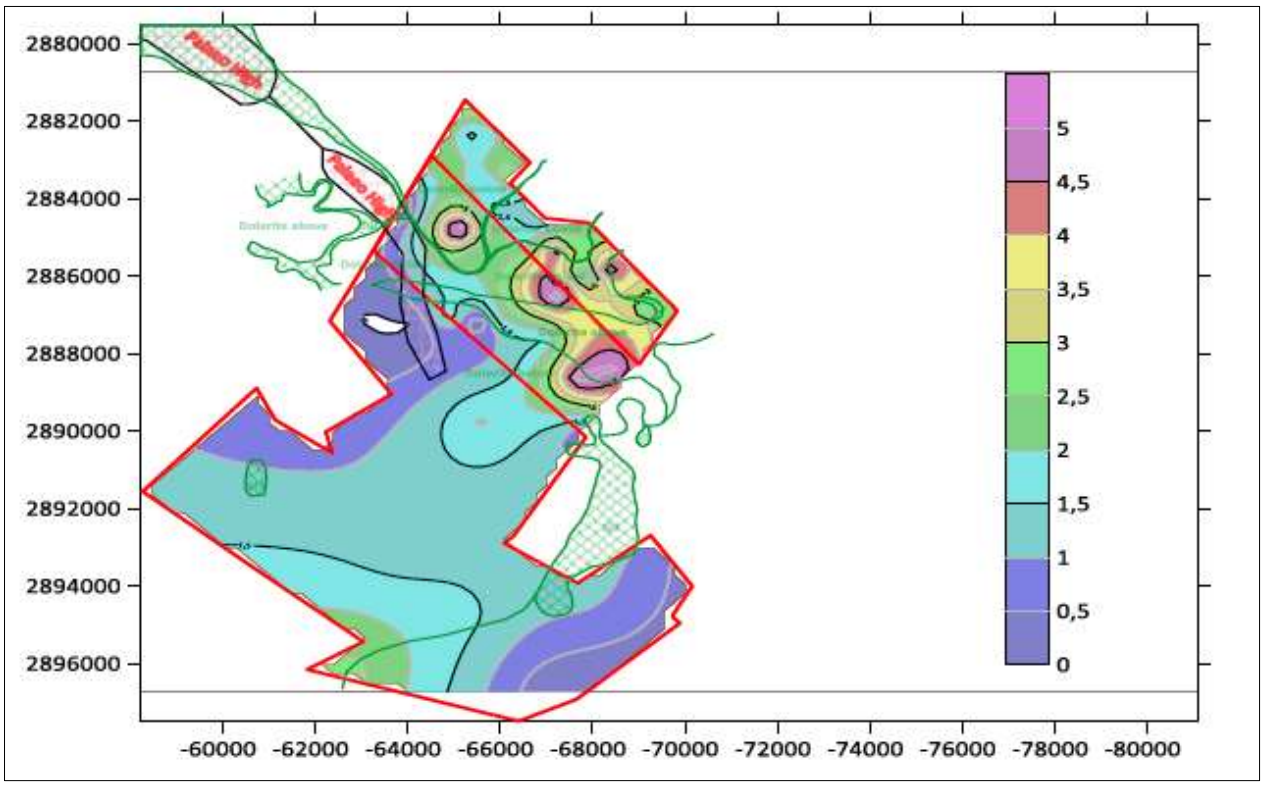

Figure 8:S2L Seam Thickness

The depth to the roof of S2 is displayed in Figure 9. The maximum depth from surface to the seam, 160m is found towards the south east.

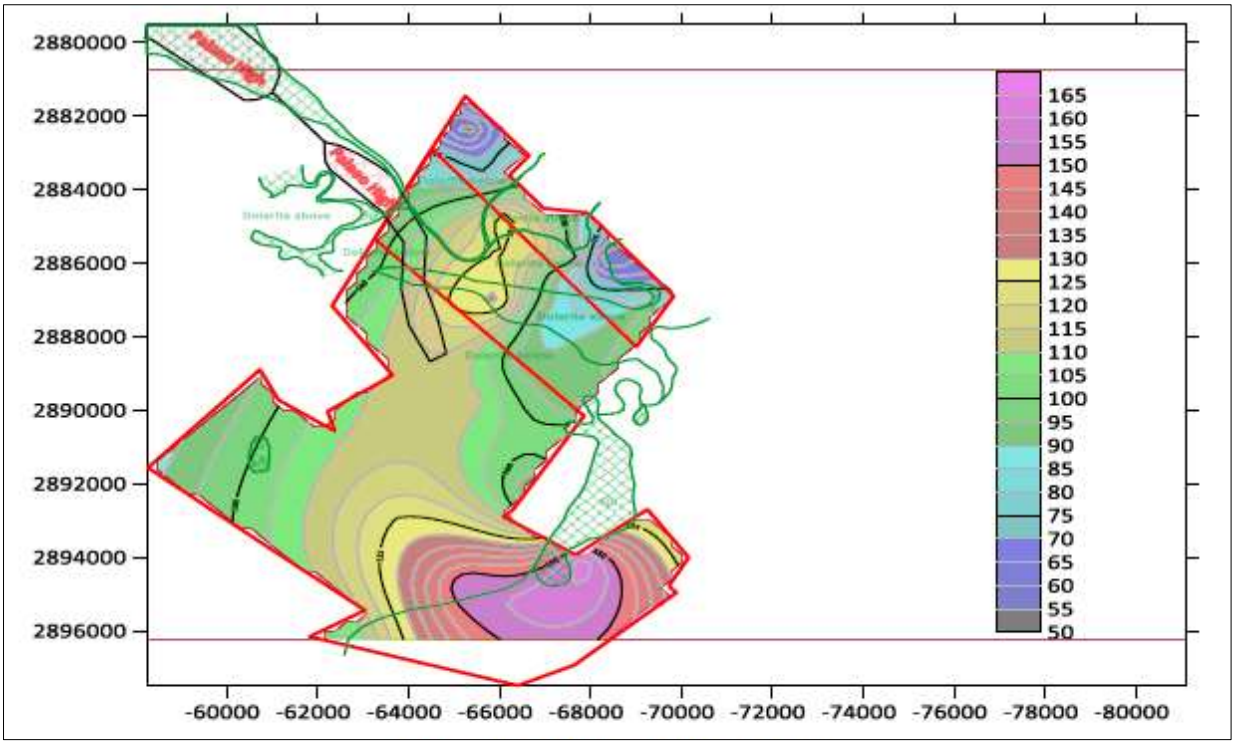

Figure 9: S2 Lower Roof Elevation

The floor elevation ranges from 1585 m.a.m.s.l, the highest elevations are found along the periphery of the respective paleo-valley and the lowest elevations along the paleo-valley (Figure 10).

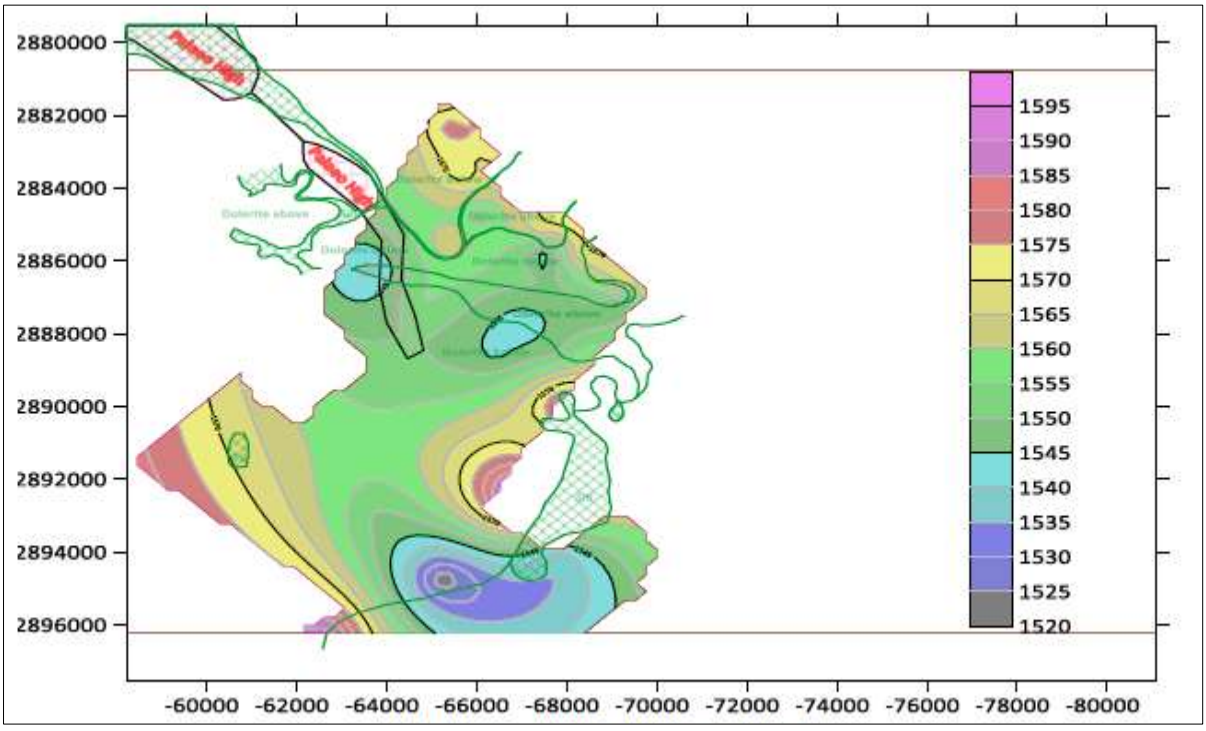

Figure 10: S2 Lower Floor Elevation

3.2.3.1 MINING METHOD

Three shafts will be opened. The underground mining operations will be conducted by a contractor. The underground mining method to be undertaken at Birmingham is bord and pillar mining, with continuous miners (CM) and shuttle cars, supported by roof bolters for roof support.

The underground bord and pillar mining was based on the following factors:

- The planned production rate of 1.8 Mtpa; and
- Underground bord and pillar mining utilising CM with shuttle cars is a well-proven and flexible mining system, with acceptable production rates, operating and capital costs, and safe operational standards.

The mined coal from the underground workings will be transported via conveyer belts and the haul roads, and stored on the Run of Mine (RoM) stockpile area. The coal will be fed into a crushing and washing plant via a conveyor, after which the coal product will be temporarily stored at the product stockpile area before being transported to the newly proposed or Rietkuil siding for distribution, or directly via truck to the relevant markets. A temporary low-grade stockpile will be constructed to store discard before being rewashed.

The basic coal flow diagram is provided below in Figure 11.

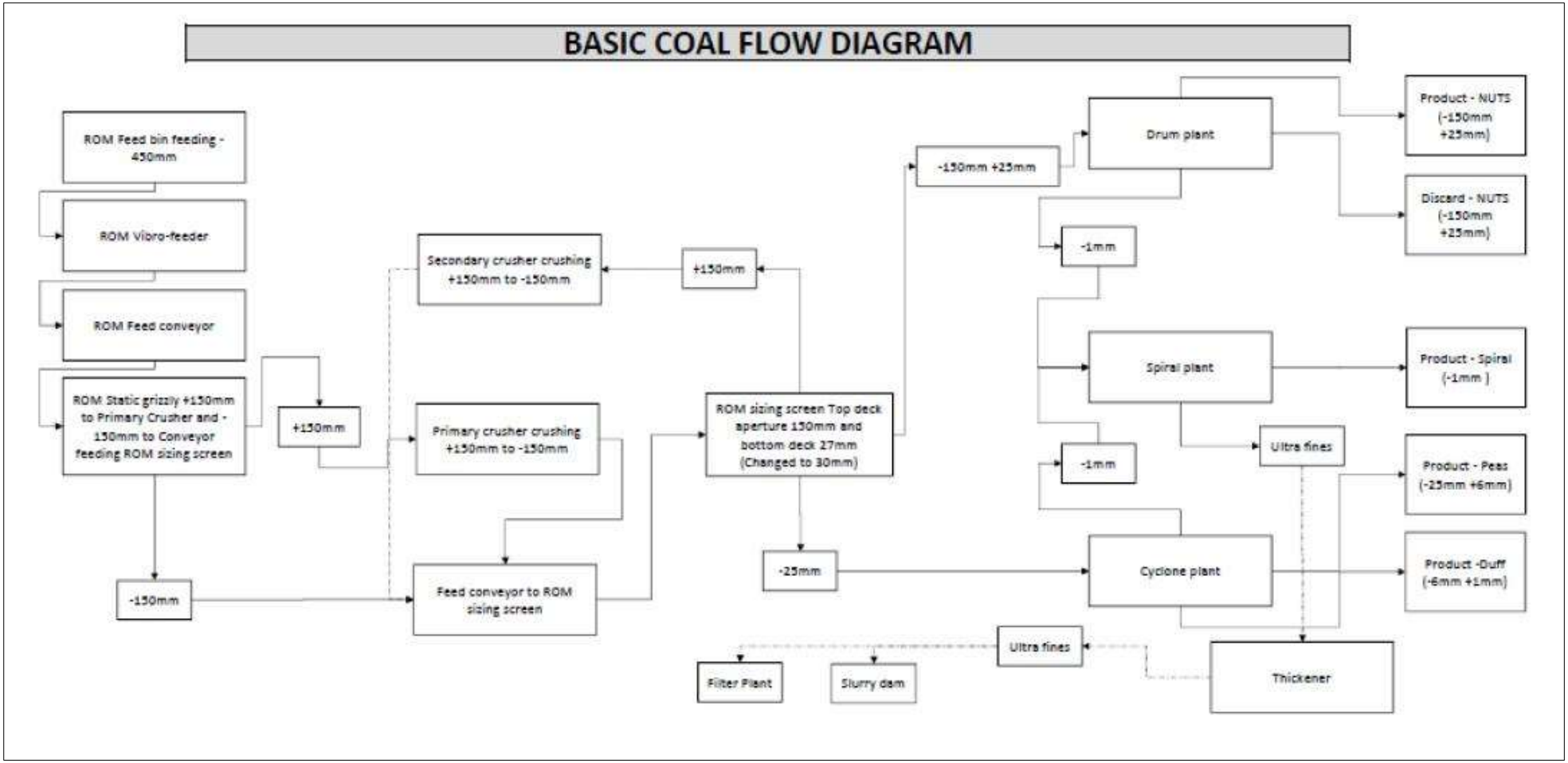

Figure 11: Basic Coal Flow Diagram

3.3 DESCRIPTION OF MINERAL PROCESSING OPERATIONS

3.3.1 COAL PRODUCT

Mined coal will be stockpiled on the RoM stockpile. The washing plant will produce spiral product, duff, peas, small nuts and medium nuts, suitable for Eskom supply, as well as the local and export markets.

3.3.2 SCREENING AND CRUSHING

The RoM will be fed into the plant by means of a feeder bin at the RoM pad. The feeding capacity of the plant will be 400 tons/hour. Coal will either be manually fed into the bin by means of a Front-End Loader or via conveyor belts. The first stage of the process plant is to screen the coal into various particle sizes. This is done by the use of a 1.5 x 2.5 m primary vibrating grizzly screen fitted with 80 mm bar spacing. The coal fraction of 250 x 80 mm fraction will be discharged into a primary double roll crusher, which will reduce the oversize fraction to 90 mm in size. The primary crusher product will re-join the grizzly undersize fraction which feeds into a secondary 1.8 x 6.0 m double deck screen fitted with 60- and 50-mm bar spacing. The oversize (+75 mm) fraction will be fed to a secondary double roll crusher, the crushed product will be returned to the primary screen feed conveyor belt, in a closed crushing circuit.

3.3.3 COAL WASHING AND PROCESSING

The eventual crushed and screened undersize fraction (-75mm) will be fed to the cyclone, drum and spiral sections of the wash plant which will then be deposited onto a product stockpile. The washing section will operate during mining hours.

The slurry from the thickener underflow will report to the filter press and make up 12 % to 15 % of the plant feed. The Dense Media Separation (DMS) plant will be capable of an 80.7% organic efficiency, with a product yield of 67.6%. The plant will produce a product suitable for both local and export markets.

3.3.4 PRODUCT STORAGE

The coal product will be stored on a product stockpile. The product stockpile conveyor belt will be fitted with a level probe, to avoid over filling the stockpile, and a mass meter for process accounting purposes.

3.3.5 MARKETS

Both the export and local markets can be satisfied with this 24.80 MJ/kg GCV ad product produced at Birmingham. Both these markets can be targeted individually and simultaneously to maximise returns.

3.3.5.1 EXPORT MARKET

This product could be placed into the international coal market as a 5 300 kcal/kg NAR CV product, with the target markets being the Indian, Pakistani, and Vietnamese consumers (power plants, sponge iron plants and cementers).

Returns from exports are, of course, dependent on international coal pricing and the SA Rand/US Dollar exchange rate.

3.3.5.2 LOCAL MARKET

Within the local market, the logical target would be Eskom. The advantage in having Eskom as the customer is the term of contracts that Eskom could offer (long term nature of contracts), removing the risk of having to seek out customers on an ongoing basis, taking cognisance of the size of the Birmingham reserve. Also, a contract with Eskom would shield Birmingham against the cyclical nature of pricing within the international market.

Eskom would be in position to burn the coal, should it be washed to a 22.5 MJ/Kg GCV, at several of its surrounding stations – Duvha and Matla, which are both within close proximity to the colliery. If the coal is washed to a 24.8 MJ/Kg GCV as proposed, the colliery would also be in a position to supply the nearby Hendrina and Arnot power stations. Pricing and term of contract, of course, depends on burning demands at various Eskom power stations. A base price, however, of circa SA Rand 19 to SA RAND 20 per GJ (FOT, Birmingham) is achievable under current market circumstances for a washed coal. It is noted that the price is a subject of negotiation between Eskom and the Colliery.

An alternative to Eskom could be the likes of the Sappi paper mills or Sasol who burn a +22.0 MJ/kg GCV product, with a sizing of 0x25mm. The product could also be considered for Rooiwal Power station in the city of Tshwane. Rooiwal station usually purchases a 0x25mm product of +23.0 MJ/kg, with returns likely to be in-line with that of Eskom, however the distance to Rooiwal can be ruled out, as collieries nearer to Pretoria would be at a logistical advantage.

This product could also be offered to the local industries utilising coal as a GCV ad of +24.5 MJ/kg. The nuts produced can be sold to the local brick manufacturers or farmers, the pea product could be utilised in the boilers of FMCG and paper producers, whilst the fines can be sold to the cement and certain brick industries.

3.4 MINE INFRASTRUCTURE

The following infrastructure is proposed for Birmingham (refer to Figure 3 above):

- Access / haul roads,
- Workshops,
- Offices,
- Weighbridge,
- Pollution Control Dam/s,
- Stormwater management facilities,
- Boreholes,
- Powerlines,
- Substation,
- Sewage management systems,

- Conveyor belt systems,
- Shaft complex,
- Lamp room,
- Ventilation Shafts;
- Processing plant; and
- Discard Dump.

Figure 12 to Figure 14 below indicates the infrastructure layouts for the northern, central and southern sections of Birmingham..

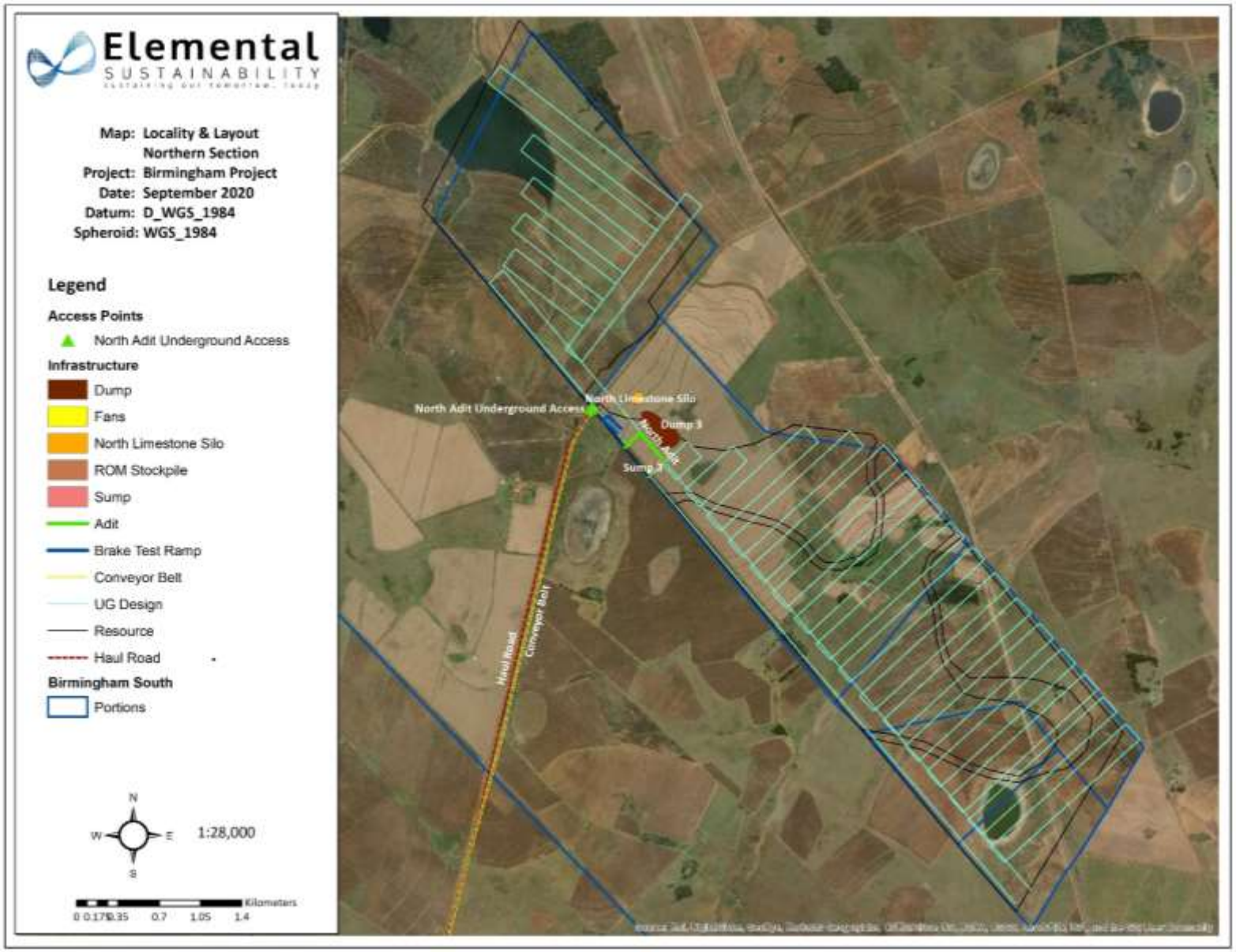

Figure 12: Infrastructure layout for the northern section of the Proposed Birmingham Mining Project

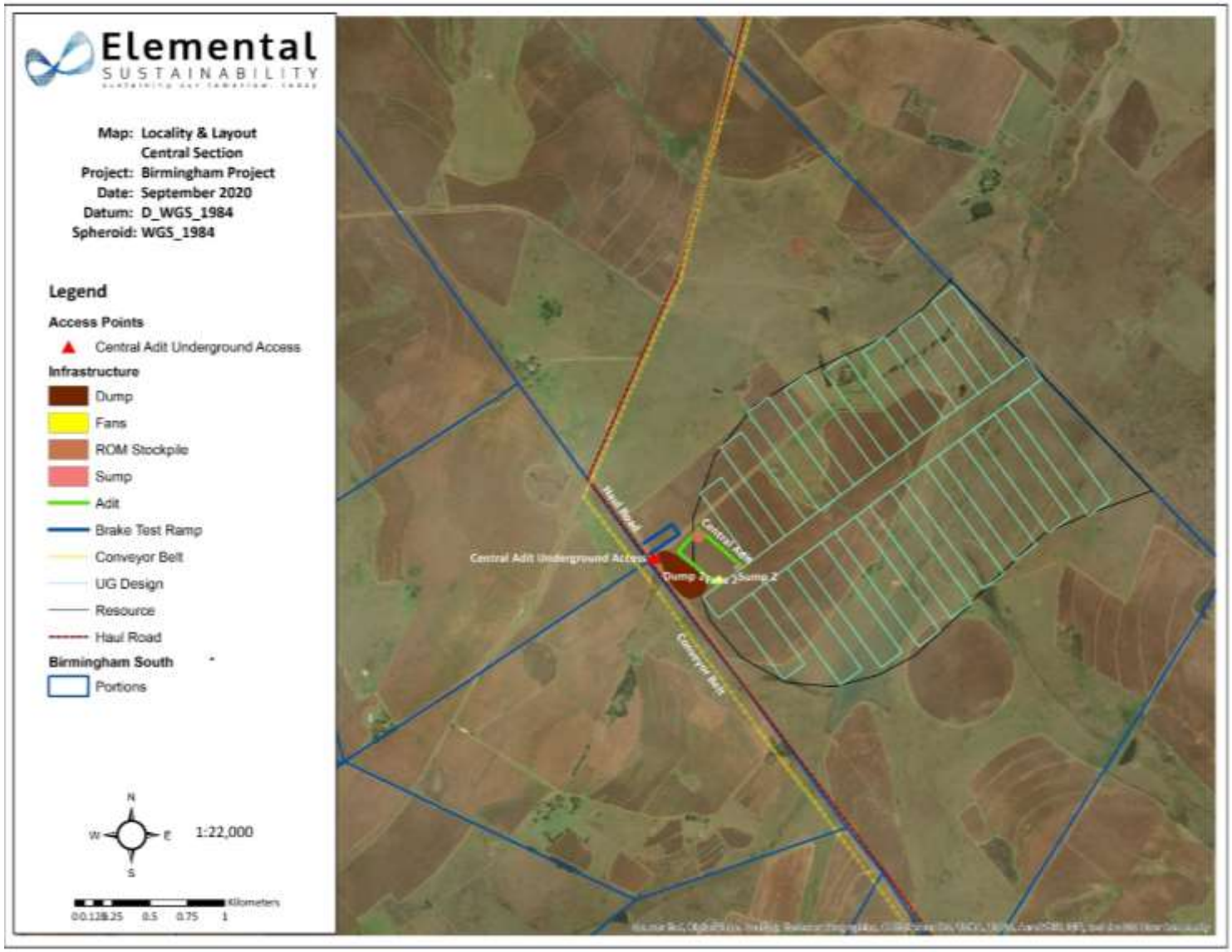

Figure 13: Infrastructure layout for the middle section of the Proposed Birmingham Mining Project

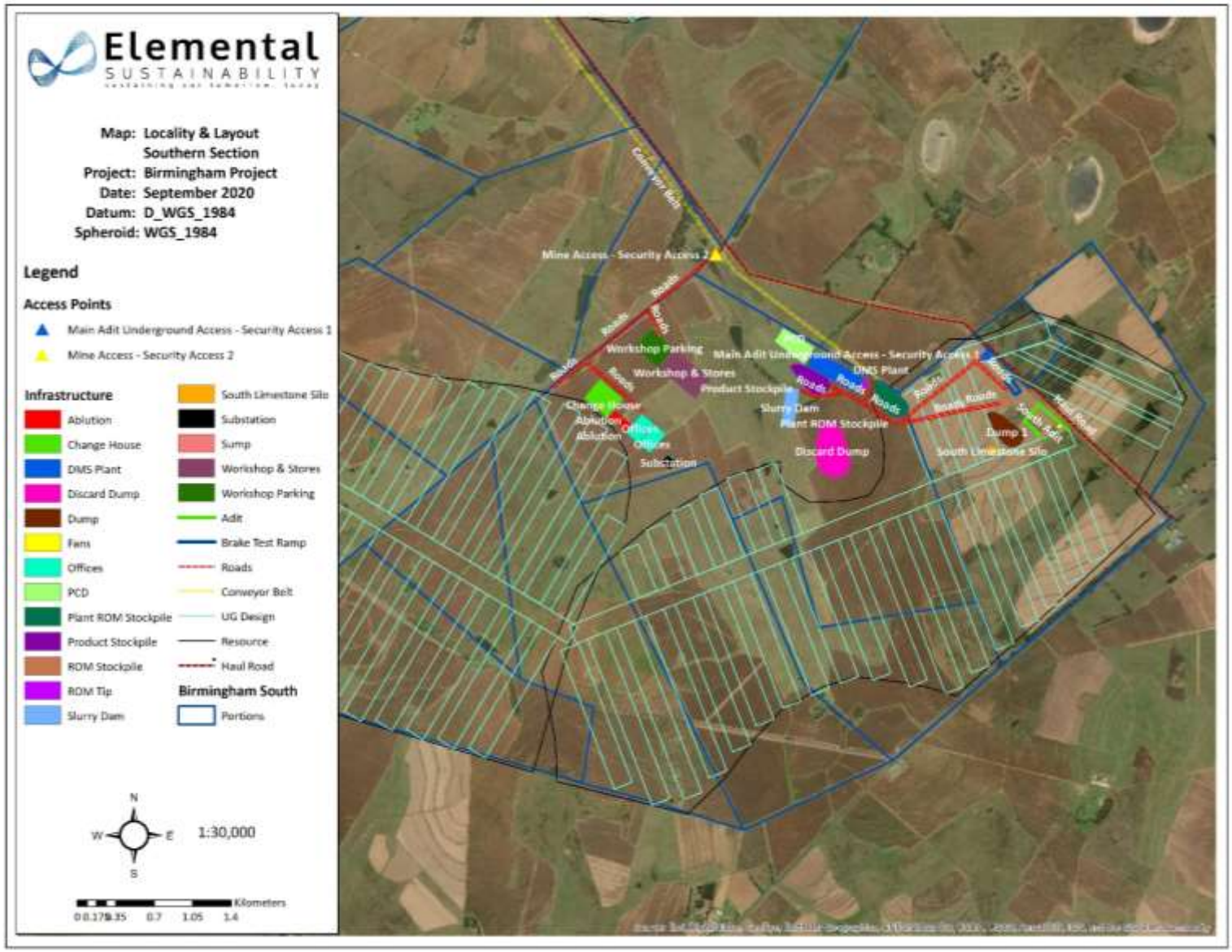

Figure 14: Infrastructure layout for the southern section of the Birmingham Project

3.4.1 GENERAL AND HAZARDOUS WASTE

General and hazardous waste will be generated during the construction and operational phases. The types of waste may include: hazardous industrial waste (such as packaging for hazardous materials, used oils and lubricants, used liquid fuels, hydrocarbon contaminated soils) and general industrial waste (such as scrap metal, building rubble and demolition waste).

Any hydrocarbon contaminated soils will be removed and dealt with as hazardous waste. These wastes will be handled, sorted and temporarily stored on site in a waste/salvage yard. Where waste can be re-used or recycled this shall be undertaken, or alternatively the waste will be removed by approved waste handling companies for recycling, re-use or final disposal at permitted waste disposal facilities.

3.4.2 SEWAGE

Portable toilets and temporary ablution facilities will be utilised. A septic tank will be installed at the change houses. The treatment method and design capacity will be included in the EIA.

3.4.3 MINE ACCESS ROAD

Access to the project area can be reached by means of the R38 and N11 tarred provincial roads.

3.4.4 SECURITY AND ACCESS CONTROL

The mine will implement access control.

3.4.5 WATER AND SERVICES

Water will be sourced from boreholes and underground. Water from the underground workings and run-off water from the contaminated area (stockpile and workshops) will be directed towards the pollution control dam on site. Potable water will be obtained from a borehole.

Water will also be required for:

- Dust suppression,
- Firefighting,
- Pumping and drilling,
- Processing plant.

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 9: 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 ventilation shaft		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 and storm water/return water dam		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
Underground 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 underground 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

Main Activity/Action/Process	Ancillary Activity	Pre-Construction	Construction	Operation	Decommissioning	Closure
	Concurrent rehabilitation			On-going	On-going	On-going
	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 and voids (underground mine and ventilation shaft)			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 10 below. The primary legal requirement for this project stems from the need for a Mining Right (MR) and an EA to be granted by 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 10: 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, 2017 (Government Notices 982 -984) *Chapter 6: Regulation 39 to 44: Public Participation;*	The EIA Regulations, 2014 [as amended] prescribes inter alia: the manner in which public participation needs to be conducted as well as the requirements of a scoping and environmental

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*	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 Mining Right application is launched by the applicant and this requires the full EIA/EMPr process for Environmental Authorisation as well.
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: (g) disposing of waste in a manner which may detrimentally impact on a water resource.* *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*	The proposed mine will have to apply for a Water Use License for the following Section 21 water uses: - Section 21(a): Talking of water from a water resource - Section 21(b): Storage of water - 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 a watercourse - Section 21(j): Removing, discharging or disposing of water found underground Water management on the mine to 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
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. Will be utilised by the Wetland specialist to determine the impact of the mine on the wetland and pan areas. The C&I risk assessment will be in the format as required by the regulations.
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. A Heritage assessment will be conducted for the project and the documents will be distributed to SAHRA for comments during the onset of the PPP Phase.
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. An Air Quality & Noise Impact Assessment will be undertaken during the onset of the project and the details will be provided within the EIA Phase of the project.
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.
National Dust Control Regulations, 2013 (Government Notice 827 of 2013) • *Section 3*	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.

Applicable Legislation and Guidelines Used to Compile the Report	Reference Where Applied
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*	
National Greenhouse Gas Emission Reporting Regulations, published in terms of NEM:AQA in Government Notice of July 2017	During operational phase the proposed 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) • *Notice 2* *Exempted Alien Species in terms of Section 66 (1)* • *Notice 3* *National Lists of Invasive Species in terms of Section 70(1) – List 1, 3-9 & 11* • *Notice 4*	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
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.
Draft National Biodiversity Offset Policy, 2017	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) promulgated in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) [as amended]; and	The new 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. Disposal will take place on an existing approved waste disposal facility. Waste Classification will be done and a Waste License is required for the mine for the establishment of Waste/ Residue Stockpiles.

Applicable Legislation and Guidelines Used to Compile the Report	Reference Where Applied
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)	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. On the 5 June 2020, the Department of Environment Forestry and Fisheries (DEFF) issued Directions GN650 in terms of the Disaster Management Act (Act 57 of 2002). As per the Directions, a Public Participation Plan is required for all public participation to be conducted in terms of the NEMA, which ensures that the EAP and Applicant will ensure that all reasonable measures are taken to identify potential I&APs for purposes of conducting public participation on the application; and ensure that, as far as is reasonably possible, taking into account the specific aspects of the application- (a) information containing all relevant facts in respect of the application or proposed application is made available to potential I&APs; and (b) participation by potential or registered I&APs has been facilitated in such a manner that all potential or registered I&APs are provided with a reasonable opportunity to comment on the application or proposed application. These Directives have been applied to the public participation process.
Regulations Pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production Operations, 2015 (Notice 1147 of 2015)	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.

Applicable Legislation and Guidelines Used to Compile the Report	Reference Where Applied
• *Regulation 5: Scope of financial provision* • *Regulation 6: Method for determining financial provision* • *Regulation 12: Preparation and submission of plans and reports*	
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.
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.

Applicable Legislation and Guidelines Used to Compile the Report	Reference Where Applied
South African Mining Charter	Focus on sustainable transformation of the mining industry. The Proposed Birmingham Mining Project is compliant with the BEE requirements. Social management and mitigation measures, developed as part of the SIA, will be 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 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;

Applicable Legislation and Guidelines Used to Compile the Report	Reference Where Applied
	• 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 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.

Applicable Legislation and Guidelines Used to Compile the Report	Reference Where Applied
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
Steve Tshwete 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 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 Birmingham Mining Project are:

- 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;
- Provision of employment opportunities to employees already skilled in coal mining within the area.
- Implementation of the proposed project will result in skills development associated with mining;
- It will contribute 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;
- The net benefit to South Africa is a product produced specifically the local commodity market, specifically for electricity generation (Eskom); and
- 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 11.

Table 11: 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 in support of this application: • Air Quality; • Wetland Delineation Study; • Blasting and Vibration Assessment; • Heritage Assessment; • Hydrogeological Assessment (including Hydropedological Assessment); • Hydrological Assessment (including water balance); • Noise Study; • Ecological Assessment; • Geotechnical Assessment; • Storm Water Management Plan (including floodlines and topography); • Social Impact Study; • Soils, Land Use and Capability and Agricultural Impact Study; • Traffic Impact Assessment; • Waste 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 Nkangala District Municipal 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	Refer to baseline ecological information in Sections 9.8 and 9.9, and the impact assessment and mitigation measures in Section **Error! Reference source not found.** of this Scoping Report. These sections will be further expanded in the EIA and EMPR, with the addition of specialist input.

	measures were explored to enhance positive impacts?	
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 **Error! Reference source not f ound.** 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?	A Heritage Impact Assessment will be undertaken 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 been transformed as noted in the specialist investigations and the coal mining already in the vicinity. 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 since 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	Renewable natural resources may be the use of borehole water, to a limited amount, on-site. Processing, washing and screening (Primary processing) is proposed, which may require additional water. Water requirements have been described above and

	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 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?	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 underground 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 Birmingham Project.
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.	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.

	1.9.1 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?	
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 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?	Refer to Section **Error! Reference source not found.**, details of the alternatives c onsidered, and Section 12 the advantages and 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.),	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 Steve Tshwete Local Municipality IDP (2017-2022), "STLM is home to a number of large industries such as Columbus Steel and Eskom (power generation). Eskom power stations, local mines which sustain the area, Columbus Steel, strong agricultural areas, a thriving commercial community and tourist

	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").	attraction including dams (Middelburg) and rivers characterize the economic profile of the local municipality.*"* 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 benefit society and the surrounding communities both directly and indirectly by providing job security at the proposed operation and through the extraction of coal reserves within the Mpumalanga Province. 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. The project will make use of local workers and service providers and this must be recorded, to ensure local economic development (as will be recommended in the EMPR). The local community will benefit through the implementation of the SLP which will provide bursaries, learnership and internship opportunities as part of the human resources development programme. A local economic development project will also be identified in conjunction with the STLM IDP.
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 DMR. 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, as well as well as the Public Participation Plan attached in Appendix D1 as per the requirements of the DEFF directive issued in terms of the Disaster Management Act (Act 57 of 2002). 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; 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?	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 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,	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.

	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?	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: 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?	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. A Social Impact Assessment and Soil, Land Capability and Agricultural Impact Assessment will be undertaken for the EIA phase.
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	By conducting a Scoping and Environmental Impact Assessment Process, the Applicant ensures that equitable access has been considered. Refer to the impact

	human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?	assessment and mitigation measures in Sections 11and 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 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?	Refer to Section 8 of this Scoping Report, describing the public participation process to be undertaken for the proposed project.
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 is also required to submit a Social Labour Plan for the proposed project, which will further address 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,	A Social Impact Assessment and Soil, Land Capability and Agricultural Impact

	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.).	Assessment will be undertaken as part of the EIA process. 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: • Mining Right (this application); • WUL (Department of Human Settlements, Water and Sanitation –DHSWS – To be 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. Th Applicant is also required to submit a Social labour Plan to the Competent Authority.
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	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.

	environmental option in terms of socio-economic considerations?	
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

This section provides a short discussion for the timeframes and scheduling for the implementation of the various project phases.

6.1 EXPLANATION OF THE TIME TAKEN TO DEVELOP THE MINE AND COMMENCE PRODUCTION

The construction phase of the project will take approximately one (1) year to complete. This includes site establishment and the construction of all infrastructure and approximately 6 months is required for the initial shafts to be developed prior to underground mining being undertaken.

6.2 EXPLANATION OF THE PORDUCTION BUILD UP PERIOD ONCE PRODUCTION COMMENCES

Once the coal resource has been exposed, production will start at approximately 75 000 tons per month and will increase by approximately 75 000 tons per month to an average of 150 000 tons per month during full production.

6.3 EXPLANATION OF PRODUCTION DECLINE PERIOD

Production rates are anticipated to be maintained until the resource is depleted. The life of mine for the project is 27 years including the 1 year ramp up period. The Mining Works programme is written for the first 10 years of mining.Once the mine is established, a full production rate of an average of 150 000 tons per month, or on average 1 800 000 tons per annum, will be maintained. This will maintain the projected work force for the underground operation.

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 SITE ALTERNATIVES

7.1.1 SUITABLE MINING AREAS

The sites for the underground mining were determined based on the prospecting results and those described within the Mining Works Programme (MWP). Minerals can only be mined where identified and verified, therefore, it was not practical to select any other sites. Layout alternatives for the mining area were determined during the prospecting phase.

The infrastructure for Birmingham was originally proposed to be located on the remaining extent (portion 0) and Portion 15 of Boschmanskraal 184 IS (refer to Figure 15 below). However, further mine planning resulted in alternative locations for the infrastructure (including the conveyor belt) due to the location of

various wetland areas for the first locality of the infrastructure (refer to Figure 12 above). The areas used for aboveground infrastructure can be altered to a greater extent in relation to the receiving environmental sensitivities and as such, there are areas which have been determined to be the "preferred alternatives" and those areas which can be considered "secondary alternatives". These areas (Figure 12) have been determined from a preliminary evaluation of how they are most optimally configured outside of the 1:100 floodlines, where possible, and away from potentially sensitive areas.

During the alternative analysis in the EIA phase, a detailed assessment will be done of all these areas, to determine which of the areas would be most suitable for infrastructure, taking into consideration environmental conditions, topography, financial feasibility, surface infrastructure and access to various parts of the site.

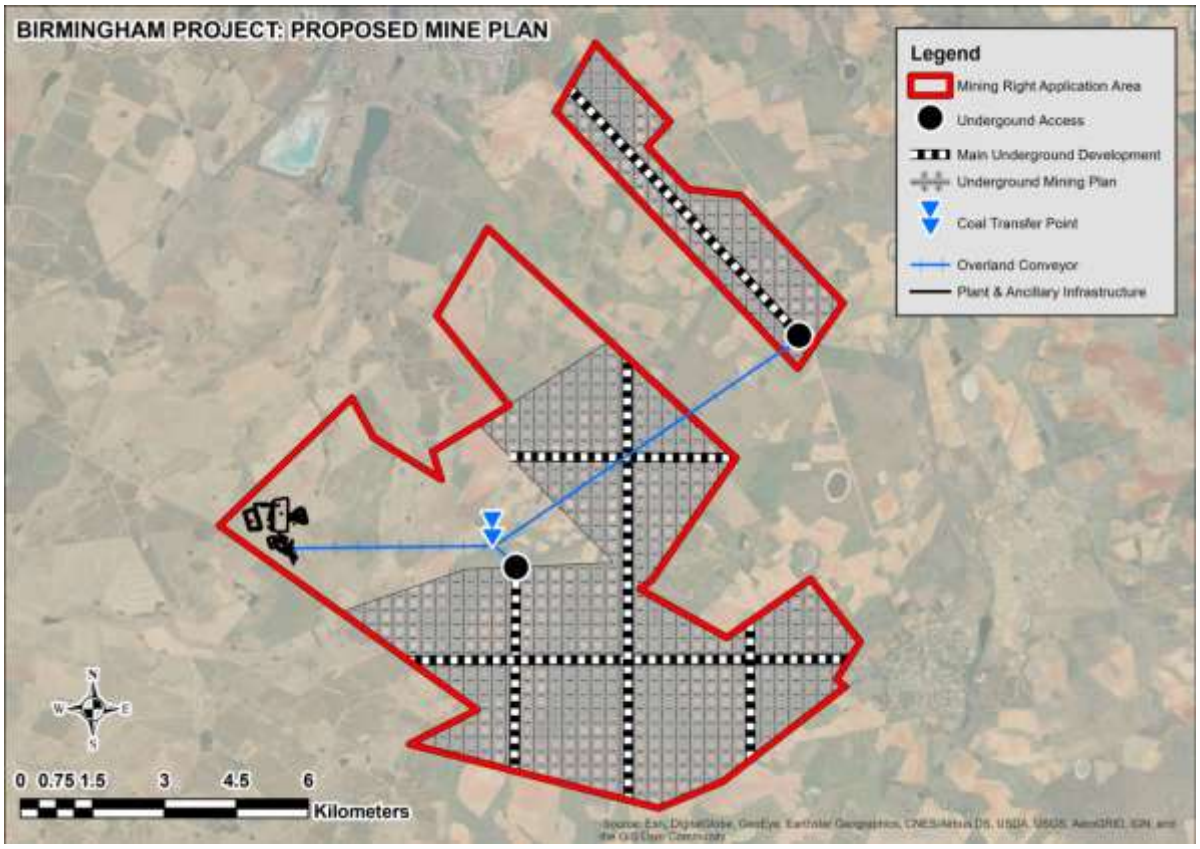

Figure 15: First proposed infrastructure layout plan for the Birmingham Mining Project

7.1.2 ACTIVITY ALTERNATIVES

The land use of the proposed mine area consists predominantly of agricultural land (grazing and crop land). Canyon Resources currently holds a prospecting right over the proposed project area and, therefore, there is a practical development alternative for the future mining area. The proposed project of the area will take into consideration economic viability and practicality, as well as the location of the coal resource.

7.1.2.1 MINING

Mining is one of the predominant land uses within the surrounding area. Several active mines, predominantly coal mines, are located within 60 km of the project area including the Tumela mine and Woestellalleen Colliery, amongst others.

The mining operations located in the surrounding area can be categorised as open cast and underground operations with surface access nodes. The exploration work to date forms the basis for the current evaluation. Birminghamwill allow for the optimum mining and usage of mineral resources within the project area, and a supply of coal to the national and international markets. As such, mining can be considered a feasible land use alternative within both the application area and surrounding area.

7.1.2.2 AGRICULTURE

Agriculture is one of the dominant land uses within the surrounding area, comprising mostly of monocultures of maize and other small-scale subsistence farming practises. The preliminary desktop analysis of the Soils, Land Use and Land Capability identified soils on site that are suited to arable agriculture with vast areas being utilized for dryland crop cultivation (crops such as maize, sunflowers and beans). Agricultural potential, based exclusively on soils, indicates that agriculture is a potential feasible alternative. It is also important to note that the agricultural potential of the soils can be returned to conditions suitable for cultivation and grazing as long as basic fertilisation and liming is undertaken, but only at considerable time and cost. As such, agriculture is a feasible land use alternative within the application area and will, therefore, be considered and assessed further in the EIA Phase.

7.1.2.3 MIXED LAND USE (AGRICULTURE AND MINING)

Mining and agriculture have been identified as the predominant land uses within the immediate and surrounding area. The character of the application area confirms this finding, with agriculture being the dominant land use on site. As a land use, mining is often viewed as directly competing and eventually replacing existing land uses. However, the nature of the proposed Birmingham Project (underground) provides an opportunity in which both feasible land uses, namely agriculture and mining can potentially be conducted concurrently. Birmingham will require access roads and the underground coal seams will be extracted at a depth of 30 – 120m. Furthermore, due to the expected depth of mining, the risk of subsidence is also greatly reduced as it is anticipated that the 22m range will be a very small percentage of the range. The practicalities of undertaking two concurrent, demanding land uses such as agriculture and mining are likely to require detailed management of operations to ensure the feasibility of both land uses, but it is potentially possible. As such, a mixed land use of mining and farming can be considered as a feasible land use alternative within both the application area and, possibly, the surrounding area.

7.1.2.4 GRAZING

Livestock grazing is one of the most common and widespread land uses occurring within the immediate and surrounding area of the proposed project. Small scale livestock (cattle and sheep) grazing occurs on site, and will be considered and assessed further in the EIA Phase.

7.1.2.5 TOURISM

The proposed project area is located approximately 10 kilometres north of Hendrina along the N11 highway. No tourist attractions are located in close proximity to the mining area. The prevalent agriculture and mining character of the area, as well as the low tourism potential and development in the area, limits the probability of tourism development and success, in the immediate and surrounding area. As a result, tourism is not considered a feasible land use alternative within the application area and will, therefore, not be considered and assessed further in the EIA Phase.

7.1.2.6 RESIDENTIAL

The nearest town to the proposed mining operation is Hendrina, which services a community that is rural in character, with farming being the main economic activity. Residential development is not suited to the proposed area of the Birmingham Project due to the distance from the town. As a result, residential development is not considered a feasible land use alternative within the application area and will, therefore, not be considered and assessed further in the EIA Phase.

7.1.3 DETAILS OF MINING METHOD ALTERNATIVES

Longwall mining and bord-and-pillar mining are two of the basic methods of mining coal underground and both methods are well suited to extracting the relatively flat coalbeds (or coal seams). These two mining methods have been considered and assessed for the underground mining at the Birmingham Project.

7.1.3.1 LONG WALL MINING

In the longwall mining method, mine development is carried out in such a manner that large blocks of coal, usually 100 to 300 metres wide and 1,000 to 3,000 metres long, are available for complete extraction. A block of coal is extracted in slices, the dimensions of which are fixed by the height of coal extracted, the width of the longwall face, and the thickness of the slice (ranging from 0.6 to 1.2 metres). In manual or semi-mechanized operations, the coal is undercut along the width of the panel to the depth of the intended slice. It is then drilled and blasted, and the broken coal is loaded onto a conveyor at the face. The sequence of operations continues with support of the roof at the face and shifting of the conveyor forward. The cycle of cutting, drilling, blasting, loading, roof supporting, and conveyor shifting is repeated until the entire block is mined out. Due to the high capital cost and its suitability for much deeper coal fields, longwall mining will not be considered and assessed further in the EIA Phase.

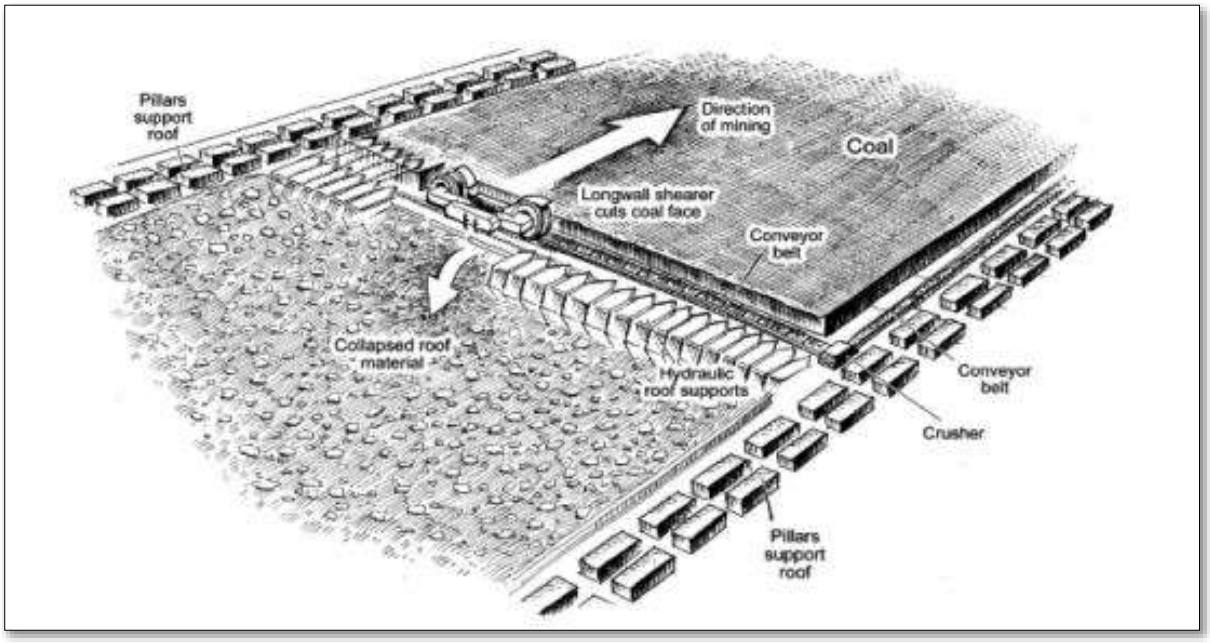

Figure 16: Illustration of long wall mining

7.1.3.2 BORD AND PILLAR MINING

Also referred to as room and pillar mining, this method is a mining system in which the mined material is taken out across a horizontal plane while leaving "pillars" of unscathed material to support the overstrain leaving open regions or "rooms" underground. The key to bord and pillar mining is optimising the pillar size. If the pillars are too small the mine will fall down. If the pillars are too big then significant quantities of valuable material will be left behind reducing the profitability of the mine. Bord and pillar mines are developed on a grid basis apart from where geological traits such as faults require the basic template to be customized. The optimum pillar size is determined by a calculation based on the weight bearing capability of the material above and below the coal seam and the strength of the coal itself.

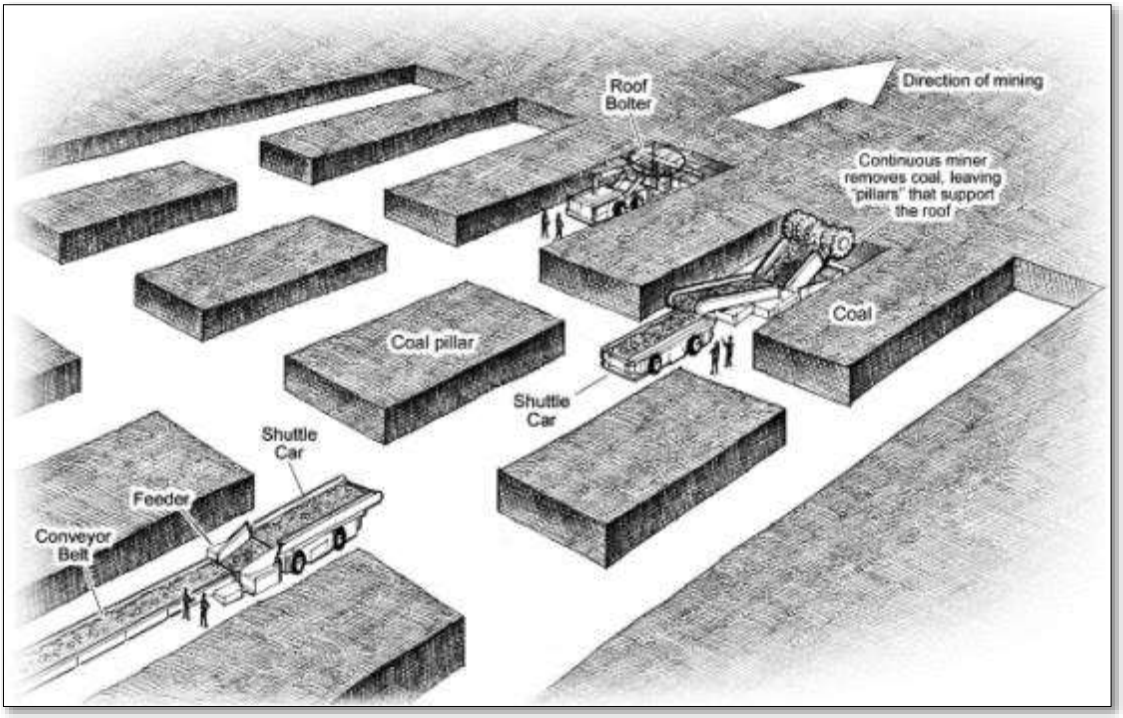

Figure 17: Illustration of bord and pillar mining

7.1.4 DESIGNS AND LAYOUT ALTERNATIVES

Please refer to Section 7.1.1 and above where the site alternatives for the mining infrastructure in relation to the reserves were discussed.

7.1.5 PROCESS ALTERNATIVES

Options pertaining to the alternatives with regards to the processes to be used on site will be evaluated in more details and the options will be taken into consideration to ensure the most efficient ore extraction methods are used.

7.1.6 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. This section describes the pros and cons of various alternatives described above. The findings are presented here in Table 12 and

Table 13. The table also notes which alternatives are to be taken forward for consideration in the EIA report.

Table 12: Summary of advantages and disadvantages of alternative land uses

Feasible Land Use Alternative	Advantages	Disadvantages
Mining	• A commercial mining operation with a sustainable life of mine; • Provision of sustainable employment and employment retention; • On-going economic input into the immediate and surrounding area; • Improvement of existing infrastructure; • Local economic development through the implementation of the SLP; • Economic injection into the region in terms of small business enterprise development; • On-going supply of both export quality coal and coal for the domestic South African market.	• Numerous potential significant negative social and environmental impacts; • Limited (27 years) duration of socio-economic benefits; • Additional water use requirements; • Rezoning of land required; • Changes to existing land use and land character; • Long-term environmental liability; and • Residual/latent environmental impacts that requiring management and monitoring post mining;
Mixed (Agriculture & Mining)	• A commercial mining operation with a sustainable life of mine; • Provision of sustainable employment and employment retention; • On-going economic input into the immediate and surrounding area; • Improvement of existing infrastructure; • Local economic development through the implementation of the SLP; • Economic injection into the region in terms of small business enterprise development; • On-going supply of both export quality coal;	• Potentially compounded significant negative social and environmental impacts; • Increased water use requirements; • Rezoning of sections of land required; • Long-term environmental liability; and • Residual/latent environmental impacts that requiring management and monitoring post mining;

Feasible Land Use Alternative	Advantages	Disadvantages
	• Continuation of agriculture and associated based economic benefits; • Reduced disruption of existing land use; • Reduced disruption of landscape character; and • Better, more effective use of land	

Table 13: Summary of advantages and disadvantages of underground mining alternatives

Mining Method Alternative	Advantages	Disadvantages
Long Wall Mining	• High Efficiency; • Higher coal recovery; • Fewer workers required; • Safety improved through better roof control and a reduction in the use of moving equipment; • Minimizes the need for dusting mine passages with inert material to prevent coal dust explosions. • Involves no blasting (safer); • Coal haulage system is simpler; • Ventilation is better controlled; • Subsidence of the surface is more predictable; • Overall offers more opportunities for automation; and • Well suited to deep coalbeds. Suitable for coalbeds deeper than 1000 feet.	• Numerous potential significant negative social and environmental impacts; • Limited (27 years) duration of socio-economic benefits; • Additional water use requirements; • Rezoning of land required; • Changes to existing land use and land character; • Long-term environmental liability; and • Residual/latent environmental impacts that requiring management and monitoring post mining;

Mining Method Alternative	Advantages	Disadvantages
Bord and Pillar Mining	• Fast, simple, and requires very little equipment; • Relatively low capital cost; • Coal production can start much more quickly, which equals faster return on investment.	• Limited socio-economic benefits; • Sterilization of the mineral resource; and • Loss of potential economic injection into the region.

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 2017, 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.

On the 5 June 2020, the Department of Environment Forestry and Fisheries (DEFF) issued Directions GN650 in terms of the Disaster Management Act (Act 57 of 2002). As per the Directions, a Public Participation Plan is required for all public participation to be conducted in terms of the NEMA, which ensures that the EAP and Applicant will ensure that all reasonable measures are taken to identify potential I&APs for purposes of conducting public participation on the application; and ensure that, as far as is reasonably possible, taking into account the specific aspects of the application-

(a) information containing all relevant facts in respect of the application or proposed application is made available to potential I&APs; and

(b) participation by potential or registered I&APs has been facilitated in such a manner that all potential or registered I&APs are provided with a reasonable opportunity to comment on the application or proposed application.

The applicant and EAPs, in addition to the methods contained in Chapter 6 of the EIA Regulations, or as part of reasonable alternative methods proposed in terms of regulation 41(2)(e) of the EIA Regulations, may make use of the following non-exhaustive list of methods:

- emails, websites, Cloud Based Services, or similar platforms, direct telephone calls, virtual meetings, newspaper notices, community representatives, distribution of notices at places that are accessible to potential I&APs.

Hard copies or electronic versions of reports may be made accessible through any of the following non-exhaustive list of methods:

- websites, Zero Data Portals, community or traditional authorities, Cloud Based Services, provided that all registered I&APs have access to the reports.

A copy of the Public Participation Plan is included in Appendix D1 of this report.

The proposed public participation process for the Birmingham Project 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 a mineral rights application, 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.

Twelve 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;
- Mpumalanga 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 Human Settlements, Water and Sanitation (DHSWS).
- 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;
- Steve Tshwete 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 land owners and adjacent land owners. 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 following government departments and municipalities shall receive copies of the BID:

- Department of Human Settlements, Water and Sanitation (DHSWS);
- Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA);
- Department of Land Affairs;
- Nkangala District Municipality; and
- Steve Tshwete Local Municipality.

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.

As the boundary of the proposed project is restricted to the Hendrina area, 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 Birmingham Project 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 Birmingham 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 D6 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 Human Settlements, Water and Sanitation (DHSWS) – (Water Use License).

I&APs who attend any public open days 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 the town of Hendrina (The Draft Scoping Report will be made available for a 30 day review and comment period, from **08 October to 06 November 2020** and can be downloaded from the following electronic link: https://www.dropbox.com/sh/8fqkp61l1semwja/AACRdkrJ2lMF3onNggnarO-za?dl=0. A hard copy of the report will also be made available at the Hendrina Town Municipality Office, the Steve Tshwete Local Municipality office and another copy will be made available to the Councillor of Ward 3. 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);

- CD copies of the Scoping Report will be submitted to stakeholders (Mpumalanga Parks and Tourism Agency, SAHRA and the Steve Tshwete Local Municipality), and government departments (DMRE and DHSWS) 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

It was initially proposed to hold a public open day (at an outdoor venue with the location to be confirmed) to provide a further opportunity for I&APs to review the available documentation for the project for the scoping phase, as per the PP Plan (Appendix D1). However, due to the restrictions, as a result of COVID-19, and as per the requirements of the Disaster Management (Act 57 of 2002), and all regulations thereunder, 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 Birmingham Project. Notes of the Zoom, Microsoft Team, Skype, and/or phone calls 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 14.

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 14: Summary of issues raised

Name and Surname	Issues raised	Response provided by project team
Mr Peter Berman	Mr Berman requested that a form be filled out and sent to him by email prior to the specialist site visit, please see the attached form in question. In the form attached the following information is required; • Please specify which specialist studies will be conducted. • The duration of the specialist studies • Dates of the site visits. • Names of specialist(s) conducting the studies. • Farm names and portions that will be visited. Lastly, he requested that the completed form be accompanied by the prospecting right and BID.	A BID was sent to Mr. Berman. The form that was requested to be completed by the specialists has been sent to Mr. Berman together with a Table indicating all proposed site visits dates, full names and contact details of the specialists, the vehicle that will be driven and the work that will be undertaken on site.
Mr Mischa Blecher	A telephonic discussed was held with Mr Blecher regarding a possible wind farm on Portions Re/15 of Boschmanskraal 184IS. Mr Blecher advised that no application had been submitted for the proposed wind farm and asked that Enertag be included in the I&AP database.	A BID was sent to Mr. Blecher to provide further information on the Birmingham Project.
Mr Phuthuma Ndzuzo	Mr Ndzuzo requested further information regarding the proposed Birmingham Project and wanted to know when the mine would open.	ELEMENTAL advised that the project was required to undergo the environmental authorisation application process which could take up to 300 days to be completed.

Name and Surname	Issues raised	Response provided by project team
		A BID was also sent through to the Mr Ndzuzo.
Mr Thinus Davel	A letter was received from Mr. Davel on 17 July 2020 in Afrikaans Geagte Mnr/Mev Wie dit mag aangaan AANGAANDE BIRMINGHAM PROJEK Hiermee my griefskrif aan u: Die natuur word altyd die slagoffer van sulke projekte….. Daar word na kostes gekyk maar die natuur moet die gevolge dra….. 1. Hoekom moet daar 'n vervoerband opgerig word vir +-6km? Die heining om die vervoerband veroorsaak dat die wild in die veld nie meer vry kan beweeg nie, en dit alles word gedoen ter wille van die gemak van die mens. 2. Die vervoerband is ook 'n risiko vir waterbesoedeling Orals langs vervoerbande lê daar kole wat afval of deur rondlopers afgegooi word asook kolestof wat deur die wind rond gewaai word. Dit sluit ook 'n brand gevaar in – en weereens moet die natuur daar deur lei! 3. Hoekom moet daar 'n 'plant' 6km van die skag kom? Om net nog 'n gebied te besoedel met kole en stof en die natuur te beskadig en ons water ook, volgens my is dit onnodige onkoste wat aangegaan word. 4. Hoekom nie 'n 'plant' by die skag nie? Daar gaan mos infrastrukture opgerig word en dan kan die kole van daar vervoer word, minder besoedeling. Een punt mindere wat die natuur beskadig en geen vervoerband wat Bokkies, Jakkalse, Bosvarke en kleindiertjies verhoed om vry rond te beweeg nie. 5. My opinie:	An email response was sent to Mr Davel: Goeie dag Mnr. en Mev. Davel, Dankie vir U epos met die aangehegte brief en U bekommernis oor die voorgestelde Birmingham Projek. As deel van die proses word spesialis studies onderneem wat na die verskillende aspekte van die natuur gaan kyk, insluitend 'n ekoloog, wie die plante en diere in die omgewing studeer. Die spesialiste ondersoek die moontlike impakte van die voorgestelde Birmingham projek op die omgewing. Die spesialiste se studies en aanbevelings om hierdie impakte te verminder word in die verslae ingesluit wat ingedien word by die Department van Minerale, Hulpbronne en Energie, die Departement wie die besluite oor die projek maak. Alle kommentaar, insluitend u brief, word ingesluit in die "Public Participation Report," wat ingedien word by die Department. Sodra Elemental Sustainability die uitleg plan van Kangra Coal ontavng sal ons U skakel vir 'n vergadering om die projek te bespreek. As u enige verdere navare het, skakel asseblief vir my. <u>English Translation:</u> Good day Mr. and Mrs. Davel, Thank you for your email with the attached letter and your concern about the proposed Birmingham Project. As part of the process, specialist studies are undertaken that will look at the different aspects of nature, including an ecologist, who studies the plants and animals in the area. The specialists are examining the possible impacts of the proposed Birmingham project on the environment. The specialists' studies and recommendations to reduce these impacts are included in the reports

Name and Surname	Issues raised	Response provided by project team
	Myn die kole Sit die 'plant' waar die kole uit die skag kom asook die kontore Minder besoedeling vir natuur Kleiner risiko vir brande Kleiner oppervlakte wat infrastrukstuur gaan benodig Wat is van ons natuur oor in ons omgewing? Dankie vir u tyd ! Met dank WM <u>English Translation:</u> Dear Mr / Mrs Whom it may concern ON BIRMINGHAM PROJECT Herewith my grievance to you: Nature always falls victim to such projects… .. Costs are looked at but nature must bear the consequences… .. 1. Why should a conveyor belt be erected for + - 6km? The fence around the conveyor belt causes the game in the field to no longer move freely, and all this is done for the sake of human convenience. 2. The conveyor belt is also a risk for water pollution Everywhere along conveyor belts there are coals that fall off or are thrown by vagrants as well as coal dust that is blown around by the wind. It also includes a fire hazard - and once again nature must lead through it! 3. Why should a 'plant' come 6km from the shaft? To just pollute another area with coal and dust and damage nature and our water as well, in my opinion these are unnecessary expenses that are incurred. 4. Why not a 'plant' at the shaft?	submitted to the Department of Minerals, Resources and Energy, the Department that makes the decisions about the project. All comments, including your letter, are included in the "Public Participation Report," which is submitted to the Department. Once Elemental Sustainability receives the layout plan from Kangra Coal, we will call you for a meeting to discuss the project. If you have any further inquiries, please contact me. A follow up email was sent to the landowner on 08 September 2020, advising that the infrastructure layout plan of the project has changed and with the new layout plan attached to the email.. Goeie dag Mnr. en Mev. Davel, Vind asseblief aangeheg die nuwe uitleg en infrastruktuur plan vir die voorgestelde Birmingham Projek. Oorspronklik was die voorgestelde infrasktrutuur geleë op die oorblywende porsie van Boschmanskraal 184. Soos u kan sien is die infrastruktuur nou geskuif na ander gedeeltes van die projek. Elemental Sustainability sal u Woensdagoggend skakel inverband met die nuwe uitleg. Groete Sonja <u>English Translation</u> Good day Mr. and Mrs. Davel, Please find attached the new layout and infrastructure plan for the proposed Birmingham Project. Originally, the proposed infrastructure was located on the remaining portion of Boschmanskraal 184. As you can see, the infrastructure has now been moved to other parts of the project.

Name and Surname	Issues raised	Response provided by project team
	After all, infrastructures will be built and then the coals can be transported from there, less pollution. One point less that damages nature and no conveyor belt that prevents Goats, Jackals, Bush Pigs and small animals from moving around freely. 5. My opinion: Mine the coals Put the 'plant' where the coals come from the shaft as well as the offices Less pollution for nature Less risk of fires Smaller area that will require infrastructure management What is left of our nature in our environment? Thank you for your time! With thanks WM Davel	Elemental Sustainability will contact you on Wednesday morning regarding the new layout. regards Sonja

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)

9.1 TOPOGRAPHY

The surface topography of the area is typical of the Mpumalanga Highveld, mainly a gently undulating plateau, varying between approximately 1600 to 1680m. Several man-made features are also of significance at the site. Numerous dams have been constructed for a variety of purposes. Various Eskom power lines transect the proposed mining area, while there is a gravel road that runs straight through the middle of the mining footprint. The Hendrina Power Station is located north-west of the project area.

9.2 REGIONAL GEOLOGY

The Witbank Coalfield is underlain by pre-Karoo rocks, mainly Bushveld Complex and Pretoria Group volcanics. Glaciation events resulted in the deposition of tillite (Dwyka Formation) on the basement rocks over most of the area. Within the Karoo Sedimentary Sequence, the Ecca Group rests on top of the Dwyka Formation. A large portion of the right is also underlaid by the coal bearing Madzaringwe Formation. Refer to Figure 18 below for the general stratigraphy of the coal seams. Figure19 is a geological map indicating the project area.

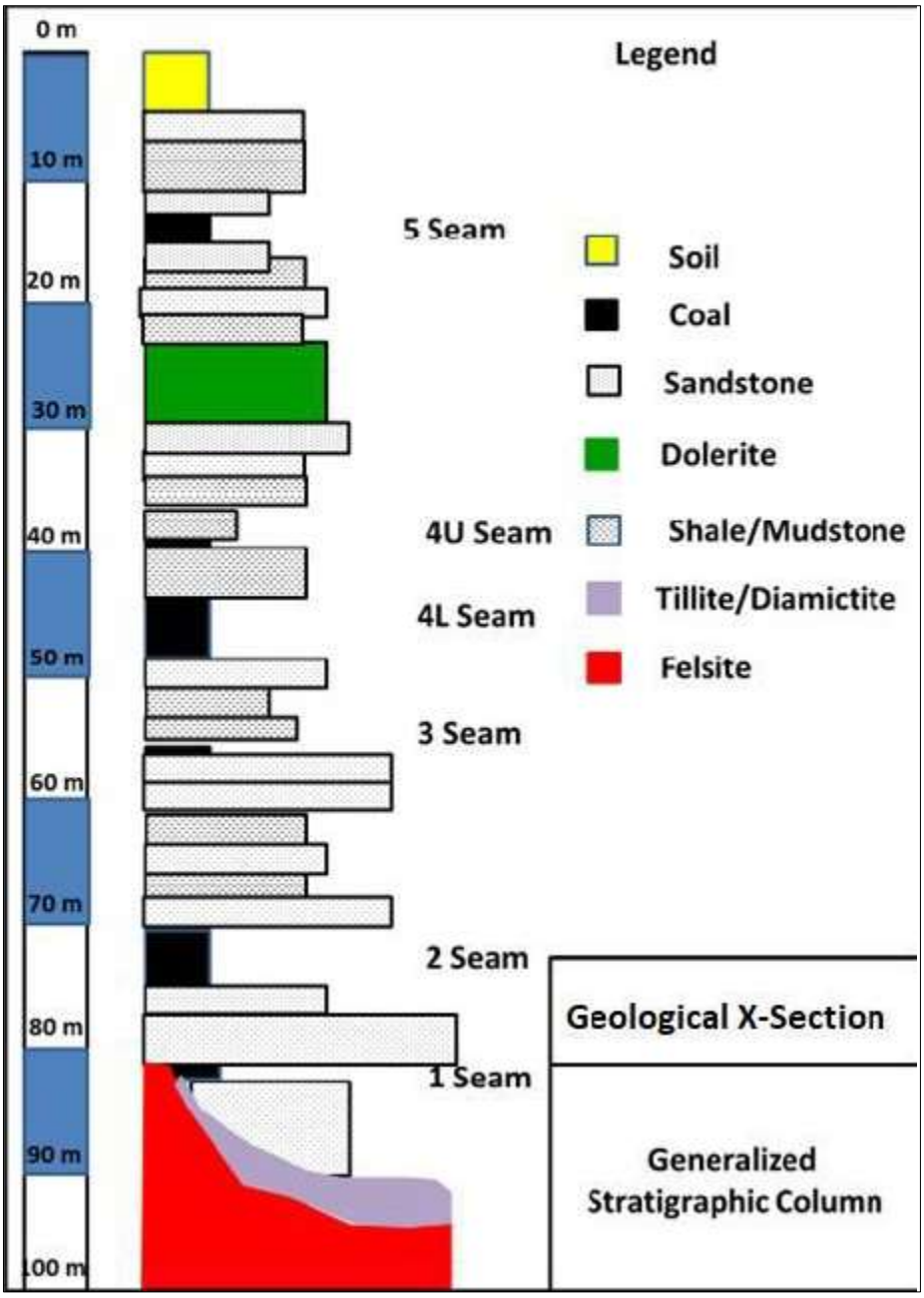

Figure 18: Generalised Stratigraphic Column

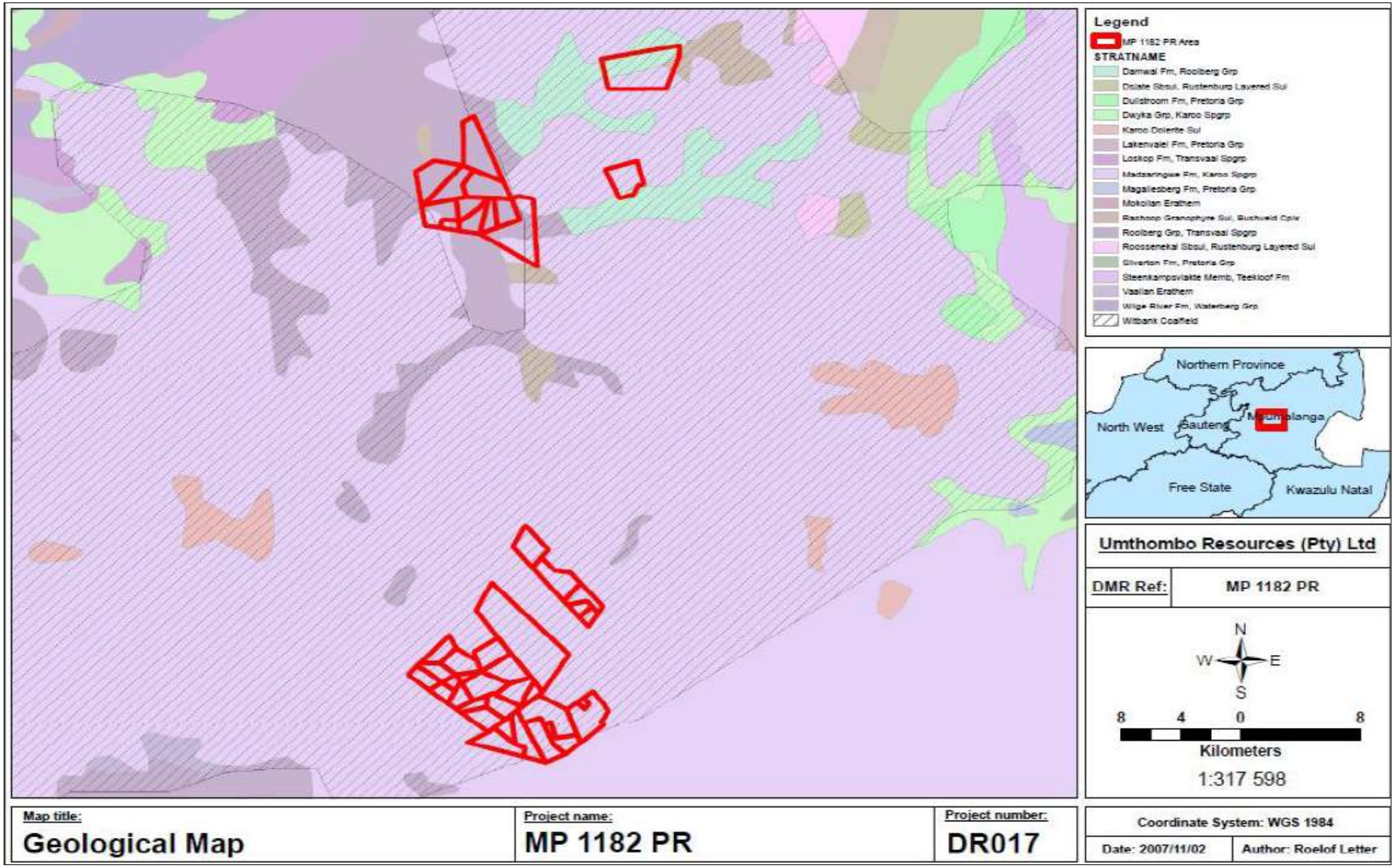

Figure 19: Geological Map indicating the Proposed Birmingham Mining Project

9.3 CLIMATE

9.3.1 TEMPERATURE

The temperatures are highest on average in October where temperatures rise above 30°C, from September until February. The coldest months in the year are in June and July (>5°C) where the number of frost days are the highest (**Figure 20**). In the summer months' maximum average daily temperatures are predicted to be 23°C to 26°C on average, with a maximum of 32°C possible during hot days, dropping to a predicted 9°C to 13°C on average at night, and 4°C minimum on cold nights. During winter months the average day time temperature are predicted in the 18°C to 21°C range, while cold winter night-time temperatures are predicted to drop to -3°C.

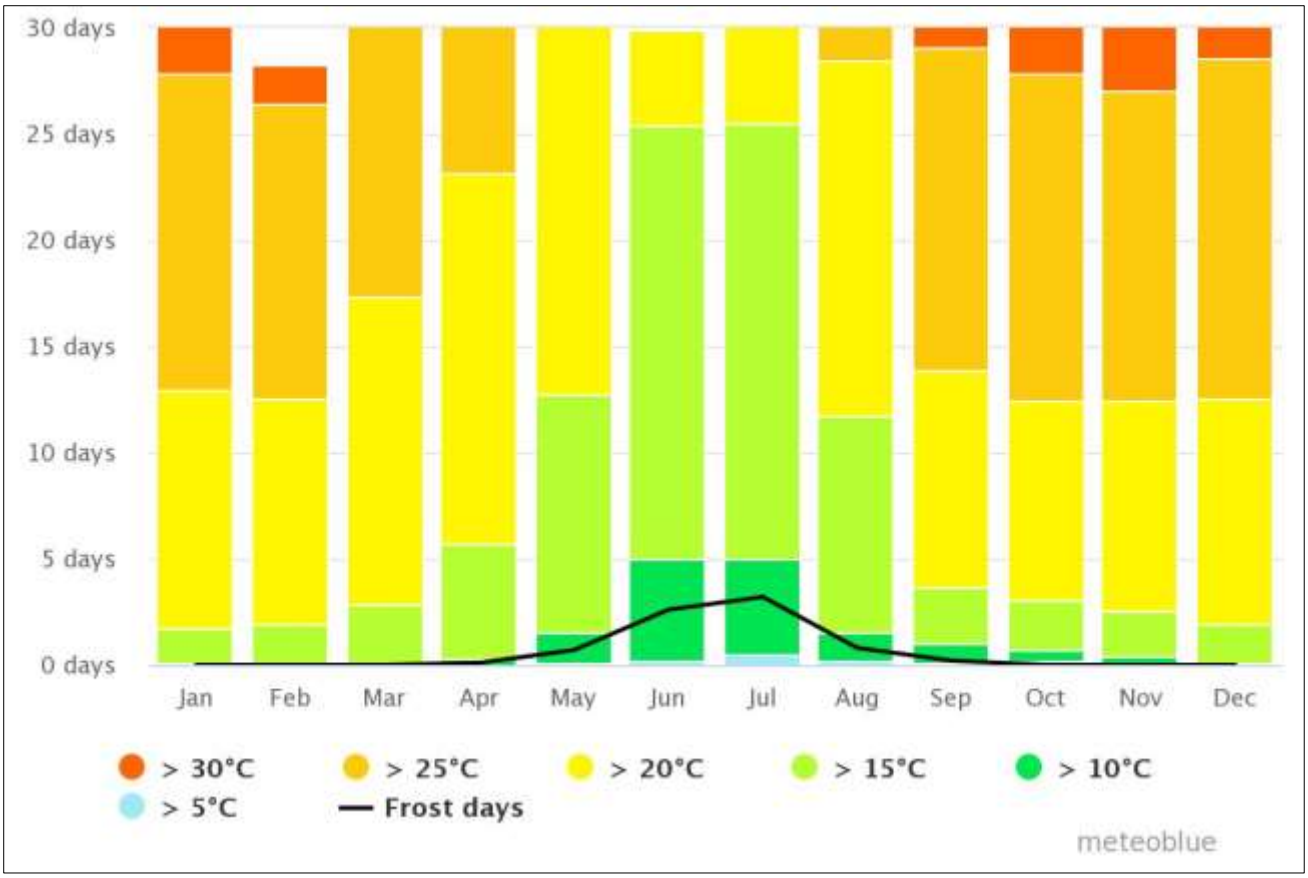

Figure 20: Mean monthly temperatures in Hendrina

9.3.2 MEAN MONTHLY PRECIPITATION AND EVAPORATION

The site is situated in Mpumalanga Province where the mean annual rainfall is 736 mm. Most of the rainfall occurs during the summer months. The region receives the lowest rainfall during July and the highest during January. The majority of rain events are between October and April. The rainfall pattern decreases significantly during the winter months resulting in rare rainfall events. Evaporation is measured at Station B2E001 for an S Class Pan and presented in Table 15 below. Figure 21 provides a graphic presentation of the monthly precipitation.

Table 15: Average monthly precipitation and evaporation for the study area

Month	Average Monthly Precipitation (mm)	Average Monthly Evaporation (mm)
January	143.8	185.8
February	84.8	143.5
March	96.6	133.6
April	42.4	103.7
May	15.0	83.3
June	7.3	65.1
July	2.7	73.0
August	8.0	102.6
September	20.3	141.7
October	77.1	165.8
November	114.0	162.5
December	124.5	176.7
Annual	**731.1**	**1524.9**

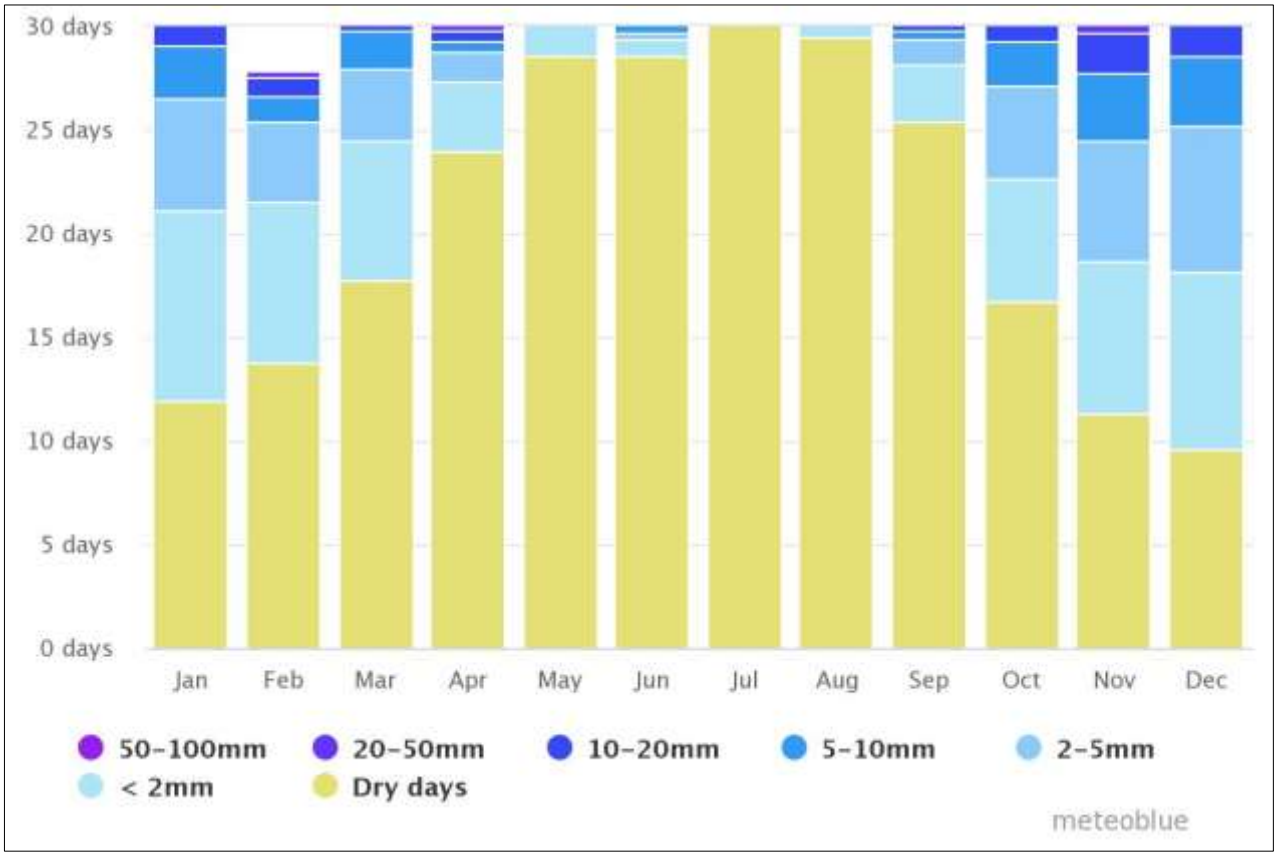

Figure 21: Average monthly precipitation

9.3.3 WIND SPEED AND DIRECTION

The average wind speed ranges from >1 km/h to >38 km/h throughout the year. Wind speed is high during the months of August, September and October, reaching speeds of more than >38 km/h on some days. From February to June, average wind speed is approximately 12 km/h per day. Refer to Figure 22.

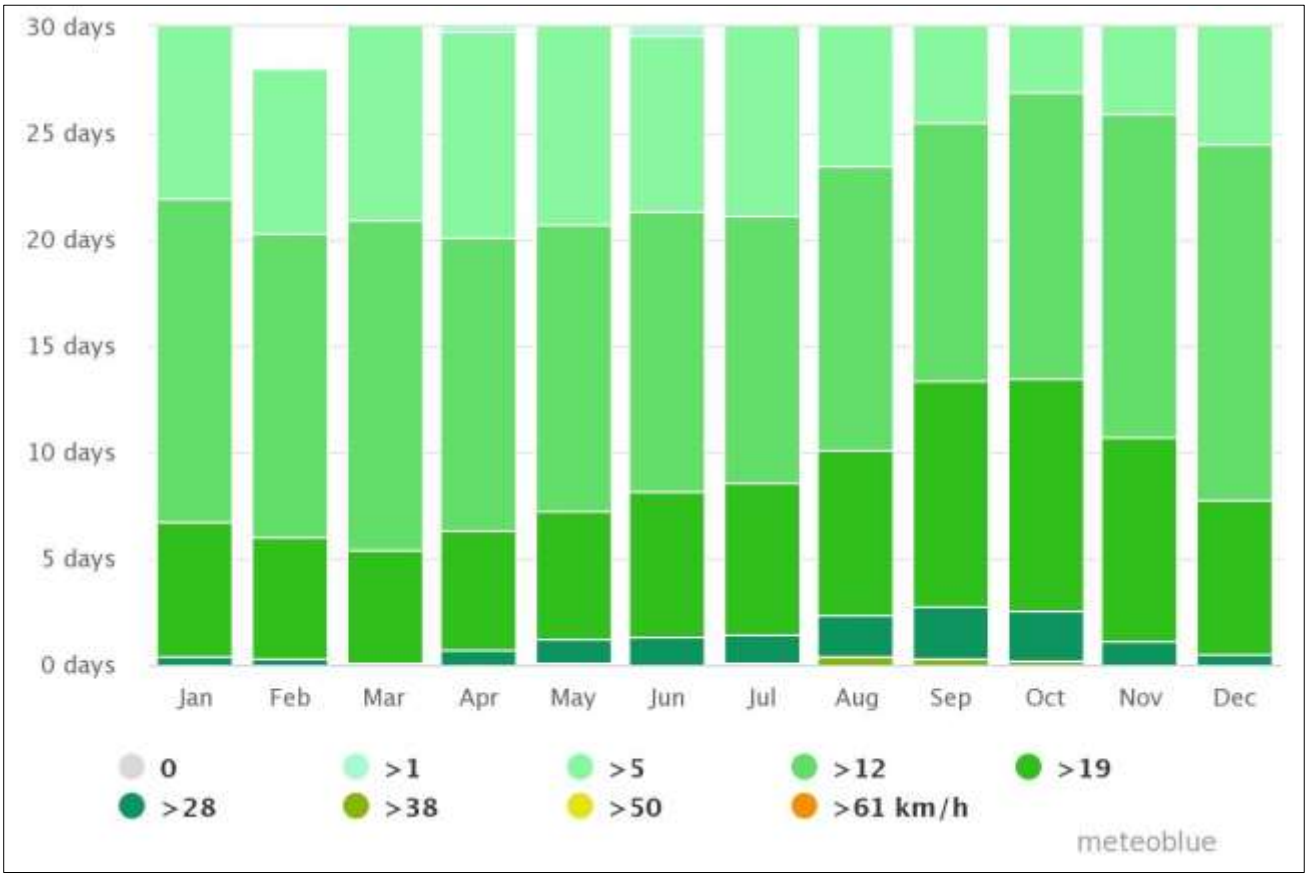

Figure 22: Wind speeds in the Hendrina area

The wind rose in Figure 23 below shows how many hours per year the wind blows in the Hendrina area and from which direction.

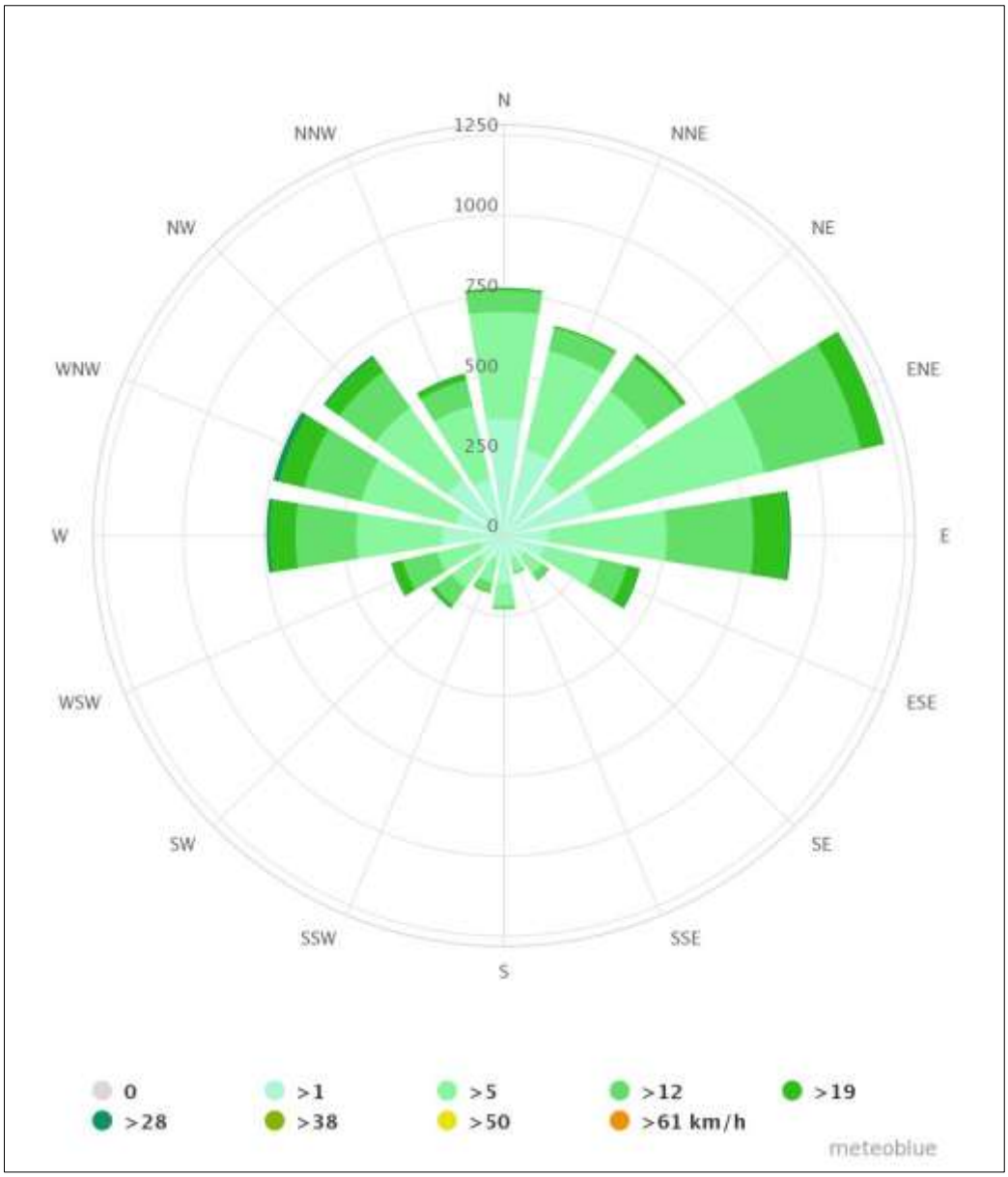

Figure 23: Wind rose indicating the wind direction

9.4 GROUNDWATER

A hydrogeological study will be undertaken for the EIA phase of the project. The results of the study will be included in the EIAr and EMPr.

9.4.1 HYDROGEOLOGY

The hydrogeology of the area can be described in terms of the saturated and unsaturated zones:

Saturated Zone

In the saturated zone, at least four aquifer types may be inferred from knowledge of the geology of the area:

- A shallow aquifer formed in the weathered zone, perched on the fresh bedrock;
- An intermediate aquifer formed by fracturing of the Karoo sediments;
- Aquifers formed within the more permeable coal seams and sandstone layers; and
- Aquifers associated with the contact zones of the dolerite intrusives.

Although these aquifers vary considerably regarding hydrogeological characteristics, they are seldom observed as isolated units. Usually they would be highly interconnected by means of fractures and intrusions. Groundwater will thus flow through the system by means of the path of least resistance in a complicated manner that might include any of these components.

Shallow perched aquifer

A near surface weathered zone is comprised of transported alluvium and *in-situ* weathered sediments and is underlain by consolidated sedimentary rocks (sandstone, shale and coal). Groundwater flow patterns usually follow the topography, often coming very close to surface in topographic lows, sometimes even forming natural springs. Experience of Karoo geohydrology indicates that recharge to the perched groundwater aquifer is relatively high, up to 3% of the Mean Annual Precipitation (MAP).

Fractured rock aquifers

The host geology of the area consists of consolidated sediments of the Karoo Supergroup and consists mainly of sandstone, shale and coal beds of the Ecca Group (Vryheid Formation). Most of the groundwater flow will be along the fracture zones that occur in the relatively competent host rock. The geology map does not indicate any major fractures zones in this area, but from experience it can be assumed that numerous major and minor fractures do exist in the host rock. These conductive zones effectively interconnect the strata of the Karoo sediments, both vertically and horizontally into a single, but highly heterogeneous and anisotropic unit.

The Selons River Formation forms a secondary aquifer that is composed of porphyritic rhyolite with interbedded sandstone and mudstone. Groundwater in this aquifer is generally found at the boundary between weathered and solid rock and along joint and contact zones. These aquifers have a poor potential yield based on the 86 % of boreholes (from available records) with yields of less than 2l/s. The water level in these aquifers is usually between 10 and 30 mbgl.

Aquifers associated with coal seams

The coal seam forms a layered sequence within the hard rock sedimentary units. The margins of coal seams or plastic partings within coal seams are often associated with groundwater. The coal itself tends to act as an aquitard allowing the flow of groundwater at the margins.

Aquifers associated with dolerite intrusives

Dolerite intrusions in the form of dykes and sills are common in the Karoo Supergroup, and are often encountered in this area. These intrusions can serve both as aquifers and aquifuges. Thick, unbroken dykes inhibit the flow of water, while the baked and cracked contact zones can be highly conductive. These conductive zones effectively interconnect the strata of the Ecca sediments both vertically and horizontally into a single, but highly heterogeneous and anisotropic unit on the scale of mining. These structures thus tend to dominate the flow of groundwater. Unfortunately, their location and properties are rather unpredictable. Their influence on the flow of groundwater is incorporated by using higher than usual flow parameters for the sedimentary rocks of the aquifer.

Unsaturated Zone

Although a detailed characterization of the unsaturated zone is beyond the scope of this study, a brief description thereof is supplied. The unsaturated zone in the proposed mining area is in the order of between 2.5 and 15.54 metres thick (based on static groundwater levels measured in the existing boreholes as well as the NGA boreholes) and consists of alluvial sediments at the top, underlain by residual sandstone/siltstone/mudstone of the Ecca Group that becomes less weathered with depth.

9.4.2 HYDRAULIC CONDUCTIVITY

Both the porosity and the hydraulic conductivity of the Ecca Group fractured aquifers are known to be low. The commonly expected values of porosity and permeability for the rock types present in the site area, are 0 – 30% (porosity) and 10-7 – 1 m.d-1 (hydraulic conductivity) respectively (Kruseman & de Ridder, 1994). Movement of groundwater in this aquifer will be preferential in secondary structures such as joints, faults and fractures.

9.4.3 HYDROCENSUS

A Hydrocensus will be conducted during the assessment and the results will be included in the EIA/EMPR documentation as it contains the current background groundwater quality.

9.5 SURFACE WATER (HYDROLOGY)

A surface water study will be undertaken for the environmental impact assessment phase of the project and the findings and recommendation of the specialist study will be included in the EIAr and EMPr. Various unnamed perennial and non-perennial watercourses and dams are situated on the project area. The southern portion of the project site drains north-east toward the Klein-Olifants Rivier. The northern portion of the project area drains in a northerly direction toward the East Woes-Alleenspruit, after which it merges with the Woes-Alleenspruit. The Woes-Alleenspruit confluences with the Klein-Olifants River, approximately 17 km north of the project site. Figure 24 indicates the various watercourse within the project area.

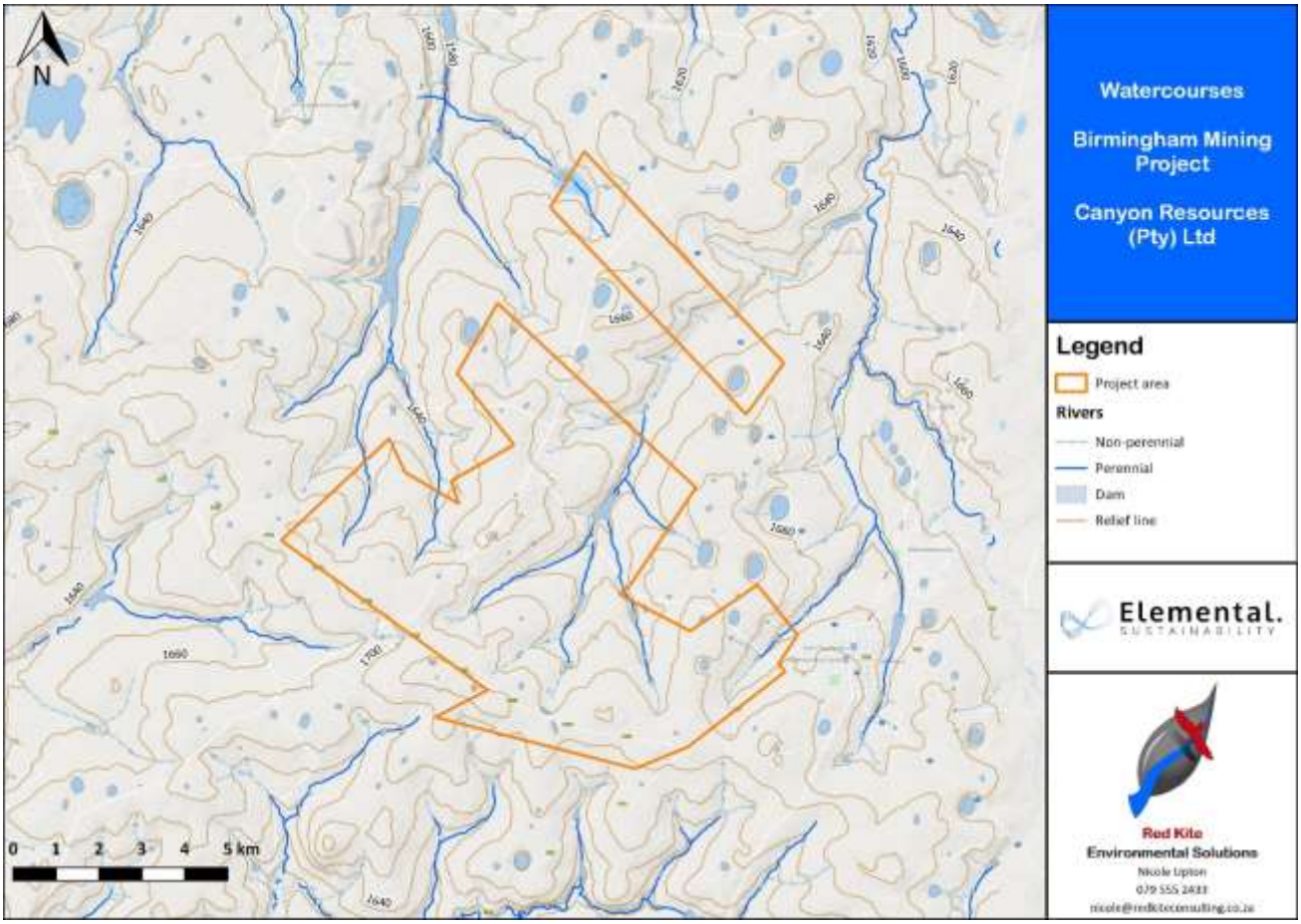

Figure 24: Watercourses within the Proposed Birmingham Project Area

9.5.1 CATCHMENT

South Africa is divided into 9 Water Management Areas (WMAs) which have been published in the Government gazette number 40279 of 19/09/16 (Notice no 1056, DWS, 2016), managed by their own water boards. Each of the WMAs is made up of quaternary catchments which relate to the drainage regions of South Africa. The proposed Birmingham Project is located mainly within the Klein-Olifants WMA, with a small section falling into the Steenkoolspruit/Olifants WMA as indicated in Figure 25. The greatest part of the project area falls within the B12A quaternary catchment, with some sections of the projects falling within the B12B and B11A quaternary catchments (refer to Figure 25).

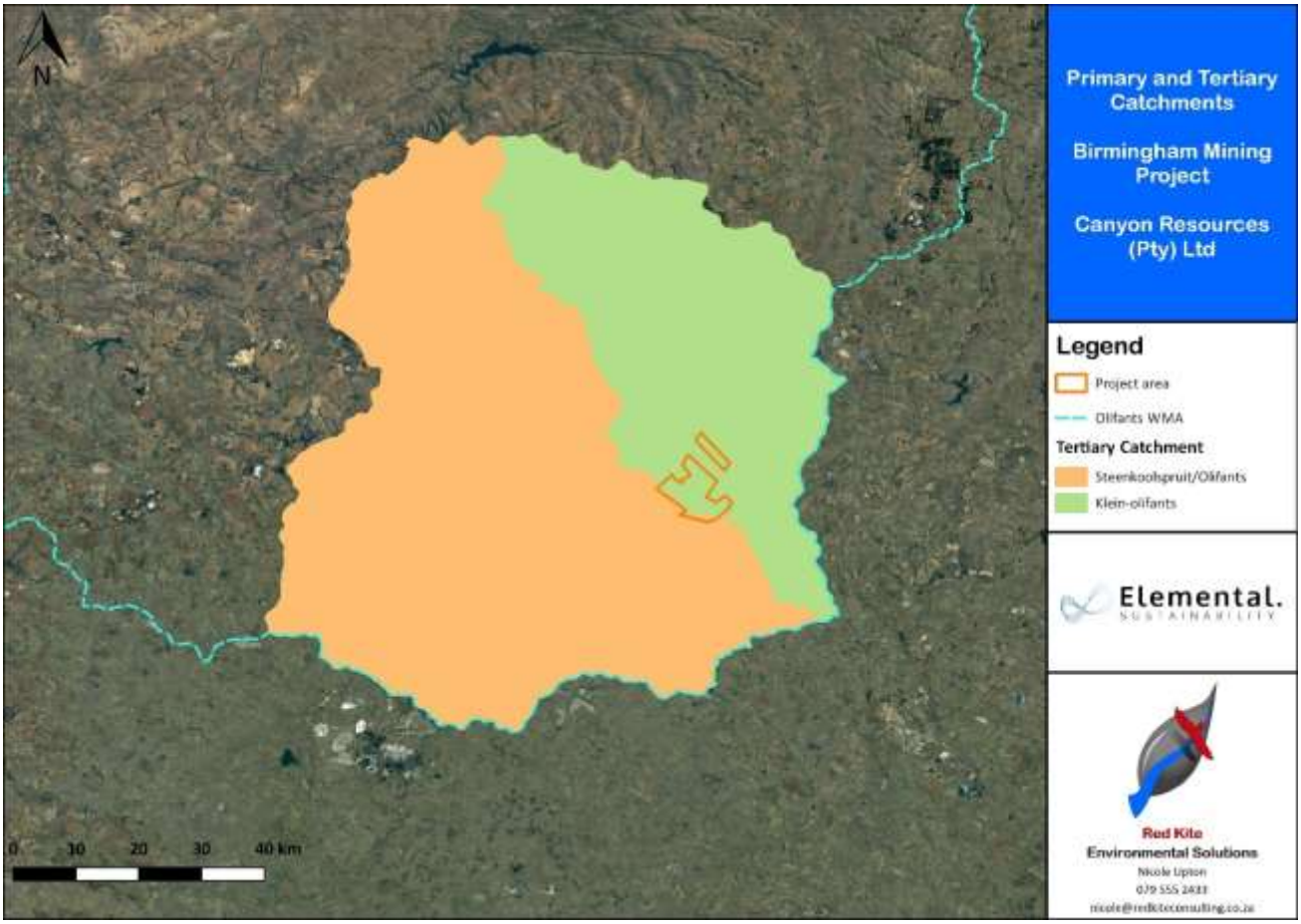

Figure 25: Tertiary catchments of the Birmingham Project area

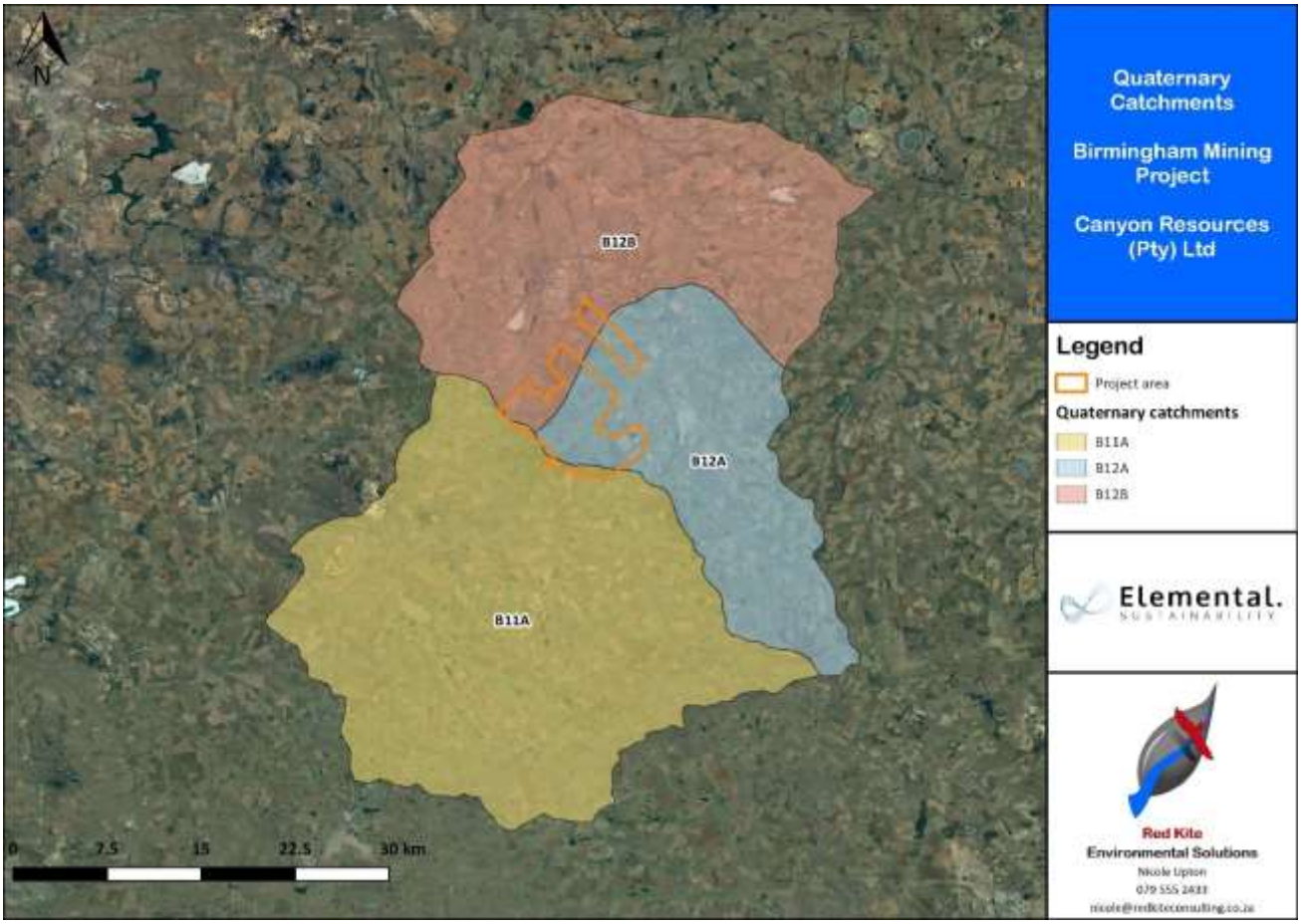

Figure 26: Quaternary Catchments

9.5.2 SURFACE WATER QUALITY

It is recognised that some water resources, by virtue of their ecological importance, may require a high level of protection, whereas other water resources may serve the country's developmental and economic growth needs. The Water Resource Classification System is a step-wise process whereby water resources are categorized according to specific classes that represent a management vision of a particular catchment by taking into account the current state of the water resource and defining the ecological, social and economic aspects that are dependent on the resource.

The management class for the broader Upper Olifants River catchment has been classified as Class III which is regarded as a water resource that is heavily utilised, and the overall ecological condition of the resource is significantly altered from its pre-development condition. Based on this classification the Resource Quality Objectives (RQOs) for the Upper Olifants River catchment have been gazetted and set according to Government Notice No. 619 of 20 July 2015. RQOs establish clear goals relating to the quality of the relevant water resources and are a numerical or descriptive statement of the conditions which should be met in the receiving water resource, in terms of resource quality, in order to ensure that the water resource is protected. Generally speaking, the RQOs associated with all resource quality descriptors are relatively high, which is indicative

9.5.3 RESOURCE CLASS

On 22 April 2016, the Minister of Water and Sanitation, published the Classes and Resource Quality Objectives of water resources for catchments of the Olifants WMA, as GN No. 466 in Government Gazette No. 39943. This notice provides a summary of the water resource classes and ecological categories for Integrated Units of Analyses (IUAs).

IUAs are classified in terms of their extent of permissible utilisation and protection as either Class I: indicating high environmental protection and minimal utilisation; or Class II: indicating moderate protection and moderate utilisation; and Class III: indicating sustainable minimal protection and high utilisation. The table below indicates the Resource Classes set for the B12A, B12B and B11A Quaternary Catchment as well as its Ecological Category.

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

IUA	Water Resource Class for IUA	Quaternary Catchment	Water Resource	Ecological Category to be maintained
Upper Olifants River catchment	III	B12A	Klein Olifants (outlet of quaternary)	C
		B12B		D
		B11A	Olifants	C

9.5.4 SENSITIVITY

Refer to Section 9.6 for the surface water sensitivity map including the buffer zones. This will be further discussed in the EIAr/EMPr.

9.5.5 AQUATIC ECOLOGY

South Africa's National Water Act (Act 36 of 1998) stipulates that the country's water resources should be managed, which includes the ecological integrity of a resource. The act focuses on protecting the needs of the environment and the basic needs of neighbouring countries, for the present and the future population. The Act defines water as a renewable natural resource. The ecological integrity of a resource is therefore considered an essential part of the resource, which must be managed.

The SASS method that was developed has been extended by defining the SASS5 method in greater detail to minimise variability. It also resulted in more accurate results when compared to the SASS4 method. Over recent years the method has become the standard for the rapid bio-assessment of rivers in South Africa and now forms the backbone of the National River Health Programme and is increasingly being included in the determination of the Ecological Reserve as required by the NWA.

Management strategies for water resources should be built upon the knowledge and expertise of various disciplines, with the biologist playing an important role. It is for this reason that aquatic bio-monitoring is extremely important to provide indications of harmful impacts to the ecosystem.

The aquatic ecology will be assessed for the Birmingham Project and the results of the study will be included in the EIAr/EMPr.

9.6 WETLANDS

There are several wetlands located within and around the proposed project area. These comprise of floodplain wetland, channeled valley bottom wetlands (VBW), deppressions, seep, flat, unchanneled VBW and valley head seeps (refer to Figure 27). An aquatic specialist will be appointed during the EIA phase of the study to identify and characterise these watercouses in more detail.

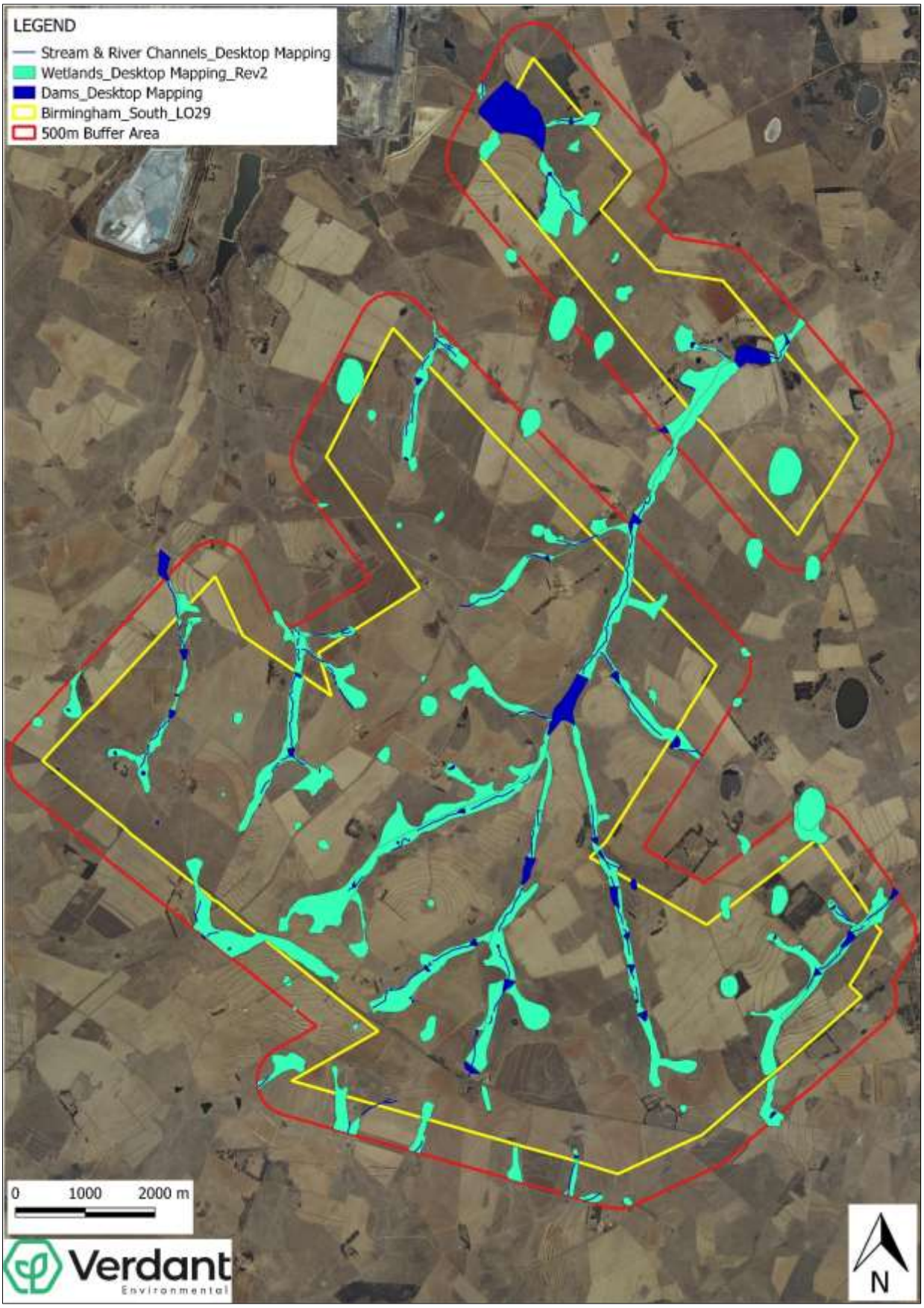

Figure 27: NFEPA rivers, Wetlands and Wetland Clusters

9.7 WATER AUTHORITY

The Department of Human Settlements and Water and Sanitation (DHSWS) 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 propsoed project. The findings and recommendation of this study will be included in the EIAr and EMPr.

9.8.1 REGIONAL VEGETATION

Figure 28 indicates the vegetation group within the Birmingham Project area, which represents the Eastern Highveld Grassland. This vegetation type is Endangered and only small fractions are conserved in statutory reserves. Some 44% is transformed by cultivation, plantations, mines, urbanisation and by building of dams. Cultivation may have had a more extensive impact than which is currently indicated by land cover data. The vegetation is short dense grassland dominated by Aristida, Digitaria, Eragrostis, Themeda and Tristachya species. Small rocky outcrops are scattered across the landscape. Wiry grasses and woody species are associated with these outcrops. These include species such as *Acacia caffra*, *Celtis africana*, *Diospyros lycioides, Parinari capensis*, *Protea caffra* and *Searsia magalismontanum* (Mucina & Rutherford, 2006). The Endangered status of this vegetation type warrants a medium-high environmental sensitivity.

Figure 28: Vegetation group within the Proposed Birmingham Project area

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 REGIONAL CONSERVATION ASSESSMENTS

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 29, parts of the project area are classified as Critical Biodiversity areas and other natural areas. Sections within the project boundary have been heavily or moderately modified

Figure 29: Mpumalanga Conservation Plan found within the Proposed Birmingham Project area

Figure 29 indicates the relation of protected areas and the National Protected Areas Expansion Strategy to the proposed project area.

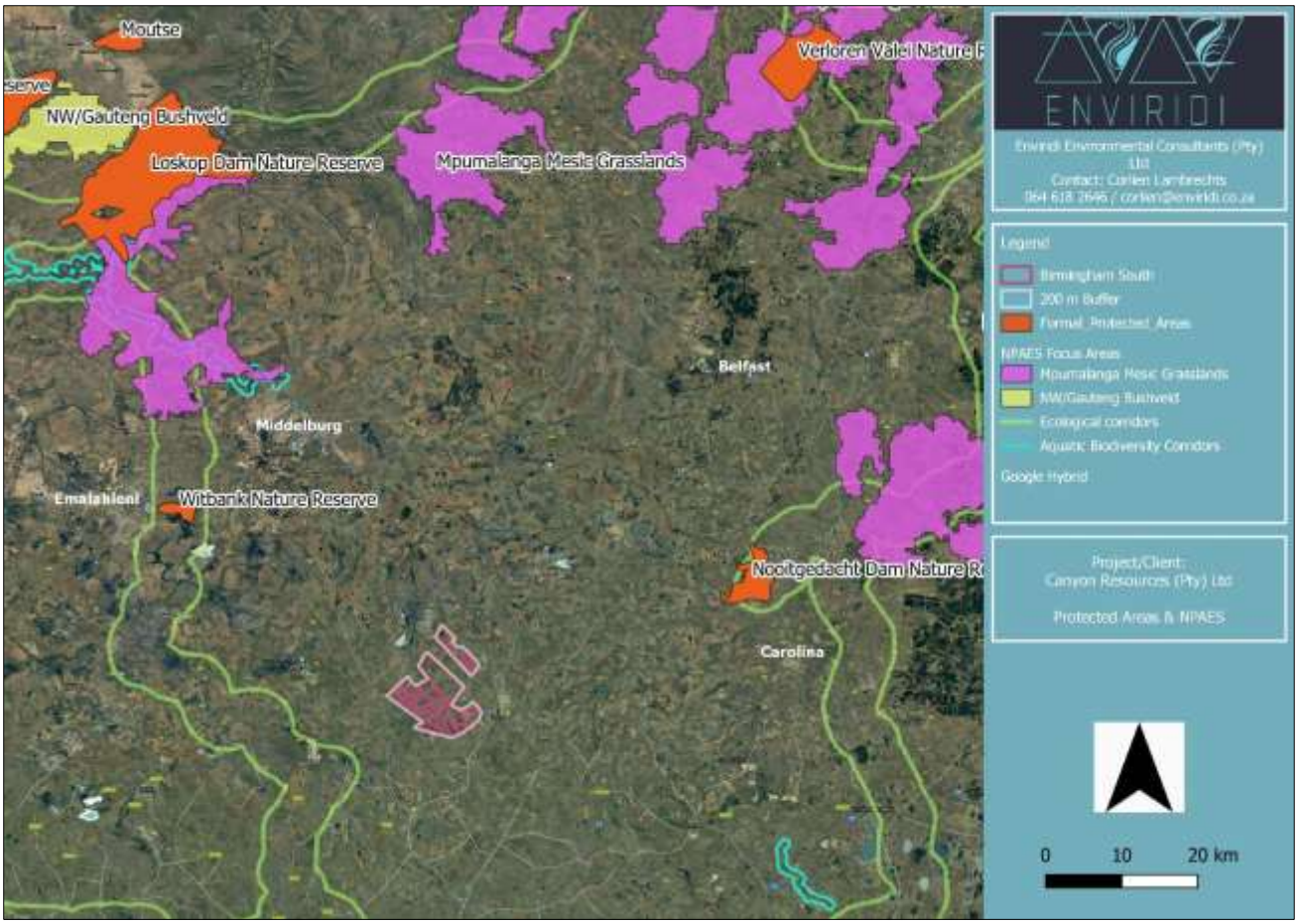

Figure 30: Protected areas and NPAES areas around the proposed project area

9.9 FAUNA (ANIMAL LIFE)

A total of 11 Red Data fauna species exhibit a moderate likelihood of occurring in the region, considering the type and distribution of habitat types. In particular, wetland related habitat is regarded significant for the potential presence of Red Data fauna species and most of the moderately likely species utilises wetland habitat extensively.

The study area is ultimately characterised by a matrix of transformed faunal habitat (maize field etc.) with scattered portions of untransformed grassland and wetland habitats, but little of the original ecological characteristics remain within the larger region.

9.10 AVIFAUNAL ASSESSMENT

Regional Avifaunal Description

Data on the bird species that could occur in the study area and their abundance was obtained from the Southern African Bird Atlas Project (Harrison et al, 1997). These data provided an indication of the bird species that were recorded in the quarter degree squares within which this proposed project falls.

The possible number of bird species that has been recorded in the broader study area (q.d.g.c.) during the course of SABAP1 & SABAP2 is 225. The number of bird species recorded, to date; in pentad 2600_2845 in which the study area mainly falls is 154 (68.4%). Out of this 'pentad total', 70 species (45.5%) were recorded with in the study area, on the day.

Figure 31 indicates the location of the Birmingham Project to the various Important Bird Species Areas (IBAs).

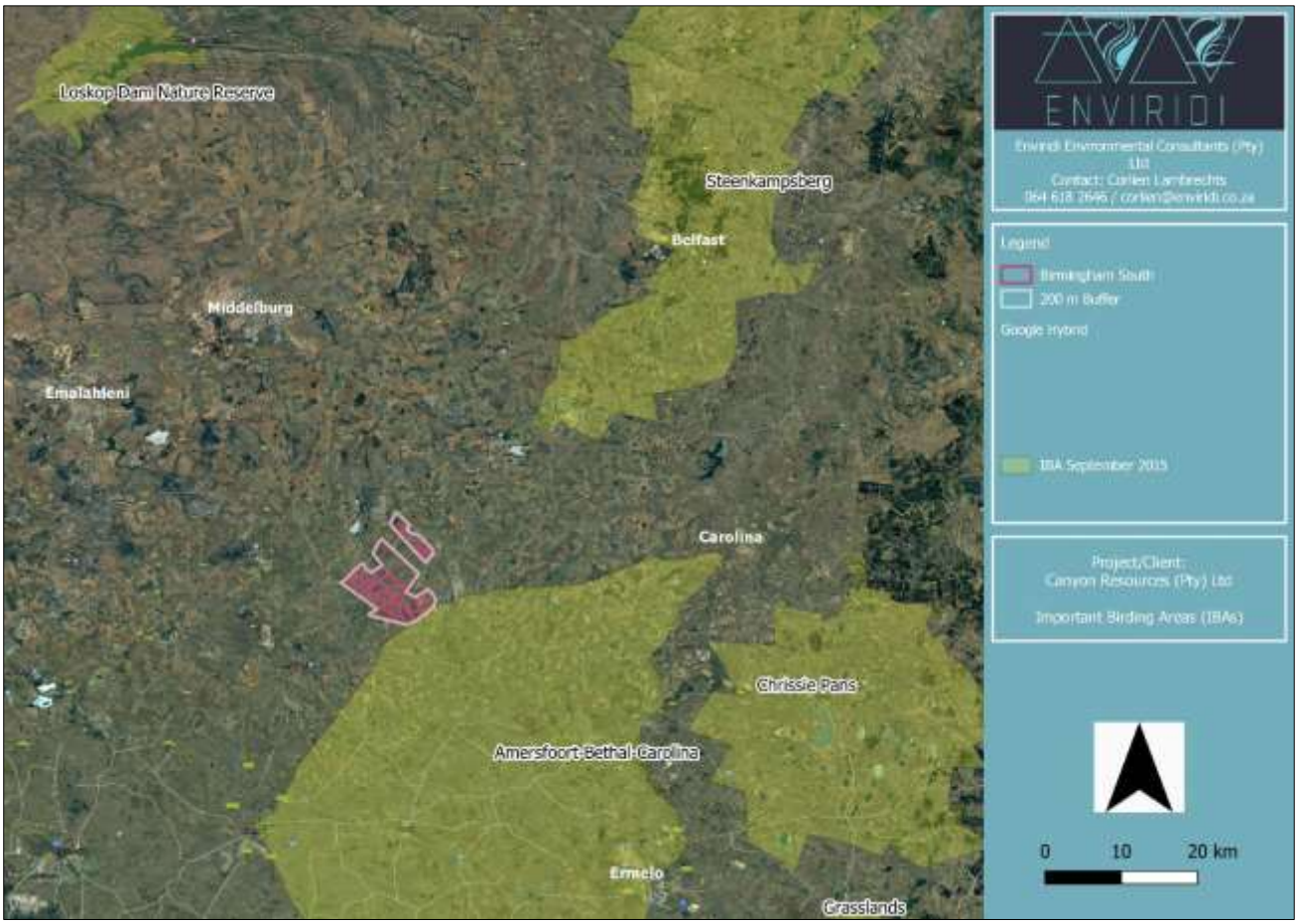

Figure 31: Important Bird Species Areas in relation to the Birmingham Project

9.11 AGRICULTURAL AND LAND CAPABILITY

The below section provides an overview of the land type, the soil forms, the land capability and agricultural potential of the Birmingham Project area. A Soil Study, Land Use and Land Capability Study together with an Agricultural Assessment will be undertaken for the project. The results thereof will be included in the EIAr.

9.12 LAND TYPES

The proposed Birmingham South Mining Right area consist of three land types while a fourth land type may also be considered as it is just outside the north-eastern boundary of the area. These land types are Ba19,

Ba33, Bb4 and Ba4 (Figure 32). All four these land types are representative of a plinthic catena where upland duplex and margalitic (vertic and/or melanic soil forms) represent less than 10% of the soil forms present.

9.12.1 SOIL FORMS

The farm portions in the middle section of the Birmingham South area (located in a diagonal strip from north-west to south-east) consist mainly of Land Type Bb4 (Figure 32). This land type represents a slightly undulating landscape that includes deep soil profiles of the Avalon, Hutton and Glencoe forms and shallower profiles of the Mispah, Glenrosa and Westleigh forms. The toe slope and valley bottom positions of this land type consist of hydromorphic soil forms such as the Rensburg and Katspruit forms and may also include more structured soil forms of the Valsrivier, Arcadia and Swartland forms.

Land Type Ba33 is located south of the Land Type Bb4 and represent a convex landscape with slope ranging between 0 and 8%. This Land Type is highly suitable for arable agriculture and consist mainly of deep to very deep profiles of the Hutton, Avalon and Glencoe forms.

The northern portions of the Birmingham South area consist of Land Type Ba19. This land type includes several soil forms of varying depth. The crest, mid-slope and toe slope positions consist of Hutton, Avalon, Longlands, Clovelly, Pinedene and Wasbank forms. The valley bottoms are dominated by the hydromorphic Katspruit form while other likely soil forms in these terrain positions include the Longlands, Fernwood and Dundee forms.

9.12.2 LAND CAPABILITY

The Birmingham South area includes eight different land capability classes according to the land capability data (DAFF, 2017). Figure 33 indicates the position of the different classes within the different farm portions that form that the Birmingham South area. The entire Birmingham South area largely consists of land with Moderate-High (Class 9) to High (Class 11) land capability. Smaller patches in between consist of land with Moderate (Class 8) land capability. Isolated patches of land in the area consist of land with Low (Class 5) to Low-Moderate (Class 7) land capability. The areas with lower land capability are associated with areas with wetland potential as it is not considered suitable for arable agriculture.

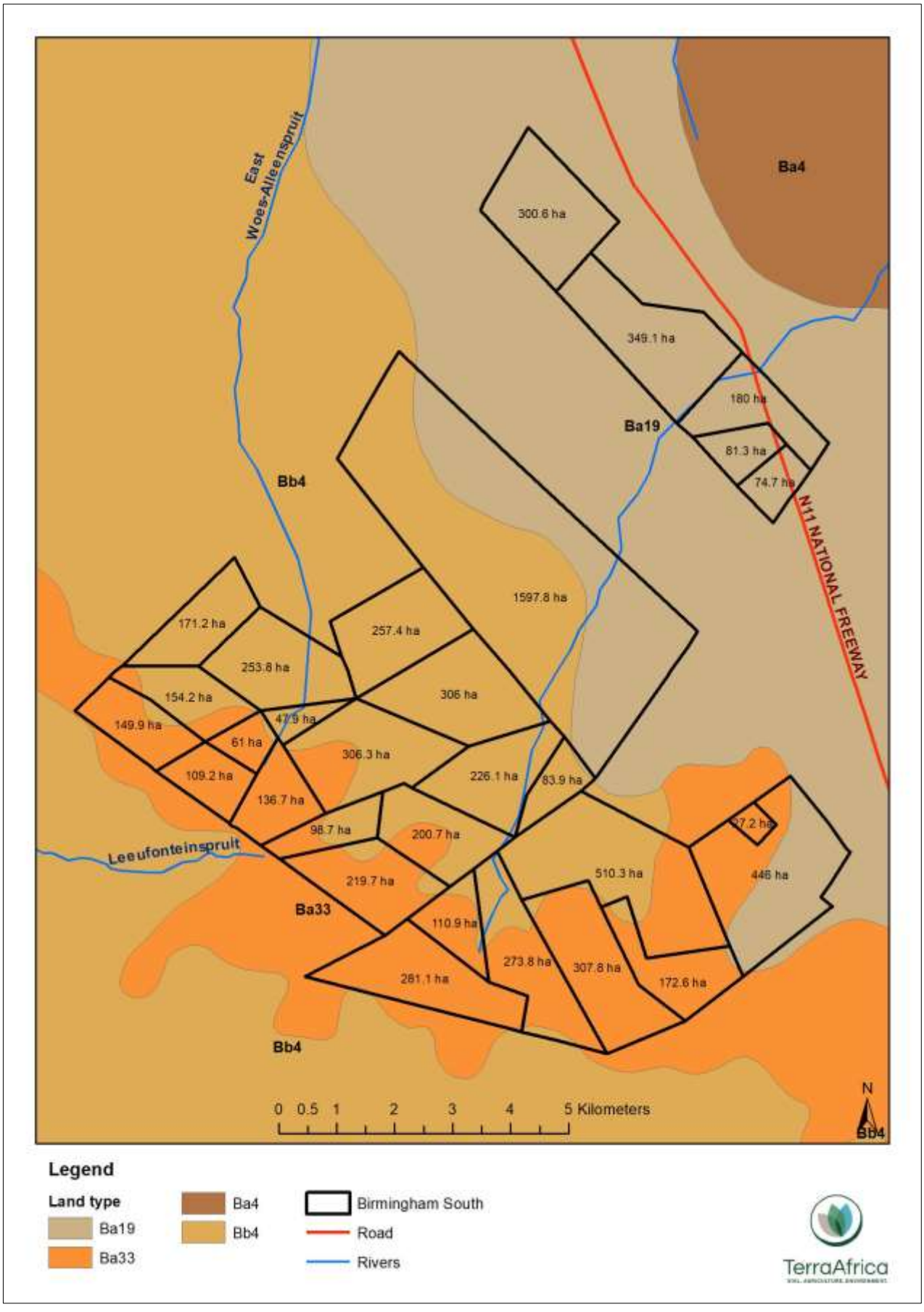

Figure 32 Land Types of the Birmingham South area and the surrounding area

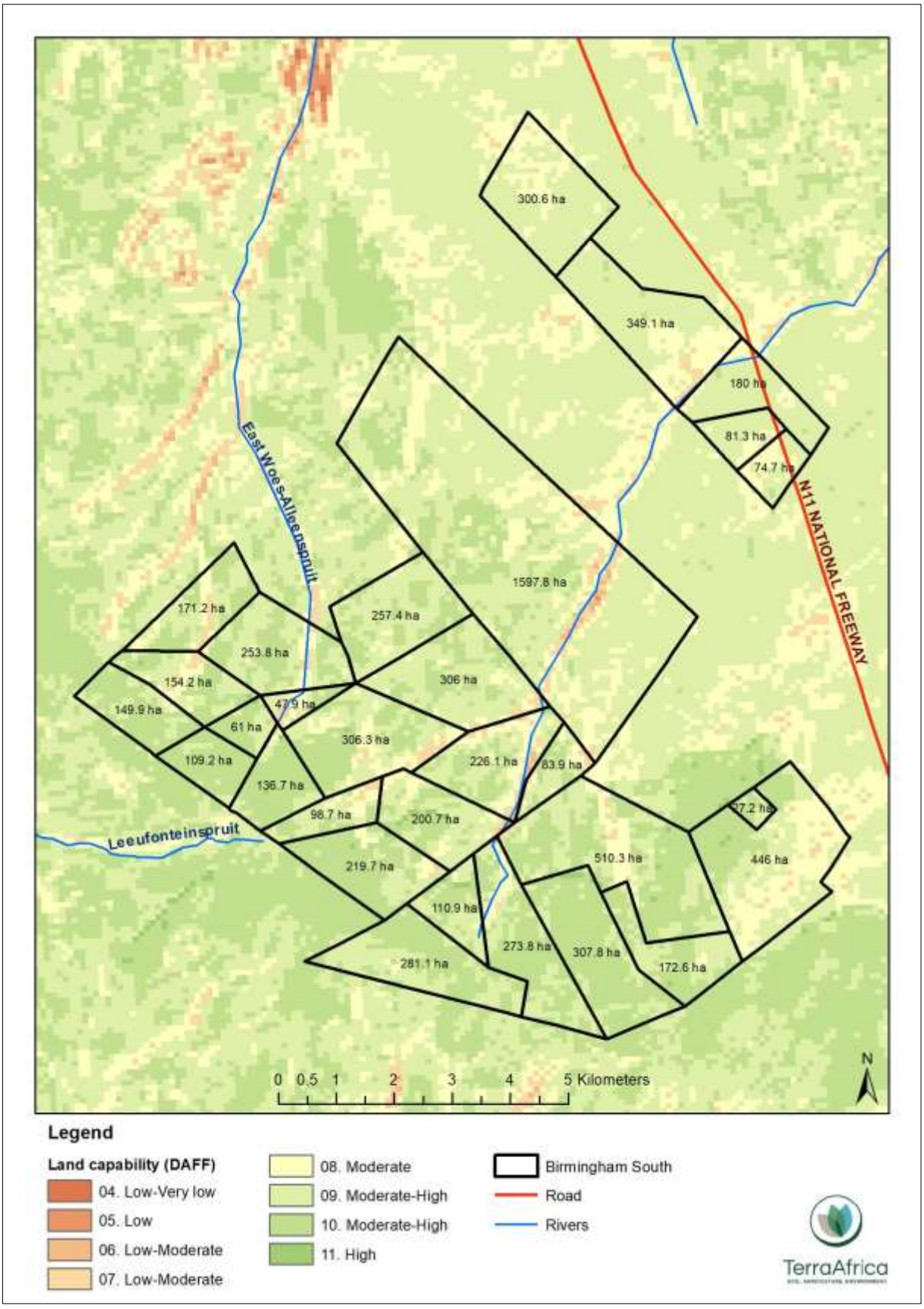

Figure 33 Land capability classification of the Birmingham South area and surrounding area (data source: DAFF, 2017)

9.12.3 FIELD CROP BOUNDARIES

All farm portions within the Birmingham South area includes areas with field crops (following the DAFF data layer). The position of these field crops is illustrated in Figure 34. All the field crop areas consist of rain fed annual crops, or planted pastures, except for the one pivot irrigation field along the middle section of the eastern boundary of the area. More pivot irrigation fields are located outside the Birmingham South area, mostly west to north-west of it.

9.12.4 GRAZING CAPACITY

The ideal grazing capacity of a specified area is an indication of the long-term production potential of the vegetation layer growing there to maintain an animal with an average weight of 450 kg (defined as 1 Large Stock Unit (LSU)), with an average feed intake of 10 kg dry mass per day over the period of approximately a year. This definition includes the condition that this feed consumption should also prevent the degradation of the soil and the vegetation. The grazing capacity is therefore expressed in a number of hectares per LSU (ha/LSU) (South Africa, 2018).

The entire Birmingham South area, as well as the surrounding areas have very good grazing capacity of 5ha/LSU illustrated in Figure 35.

9.12.5 SENSITIVITY ANALYSIS

Following the analysis of the available data as discussed in the sections above, the Birmingham South area is considered to have high to very high sensitivity to all development that will disrupt soil profiles by construction and operational activities associated with coal mining. The area is highly suitable for both crop production and livestock farming and also consist of natural water bodies such as streams and wetlands. From this initial analysis, it is therefore anticipated that project's impacts on soil quality, land capability and agricultural potential, will mostly be high with limited possibilities for mitigation.

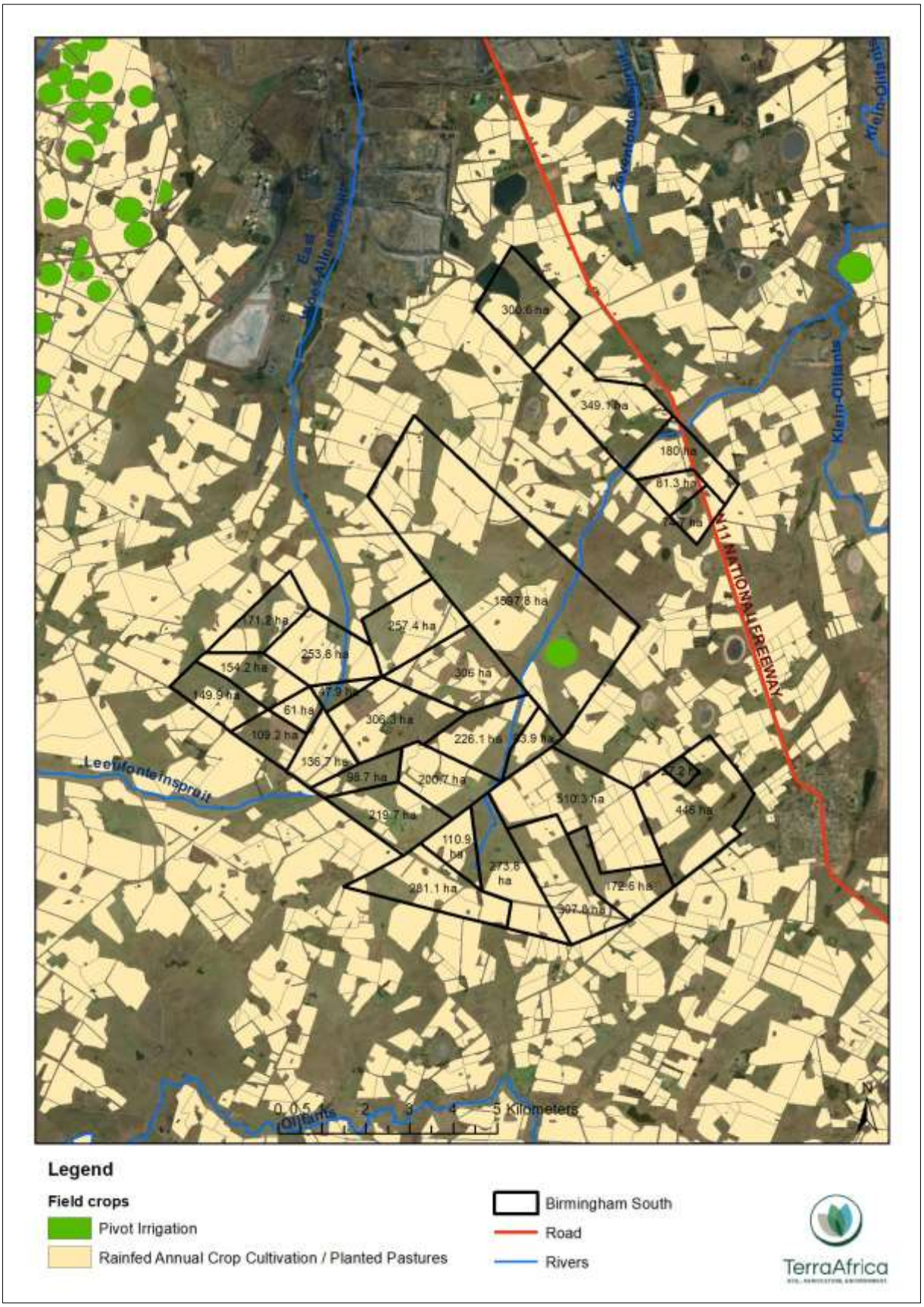

Figure 34 Location of field crop boundaries within and around the Birmingham South area (data source: DAFF, 2019)

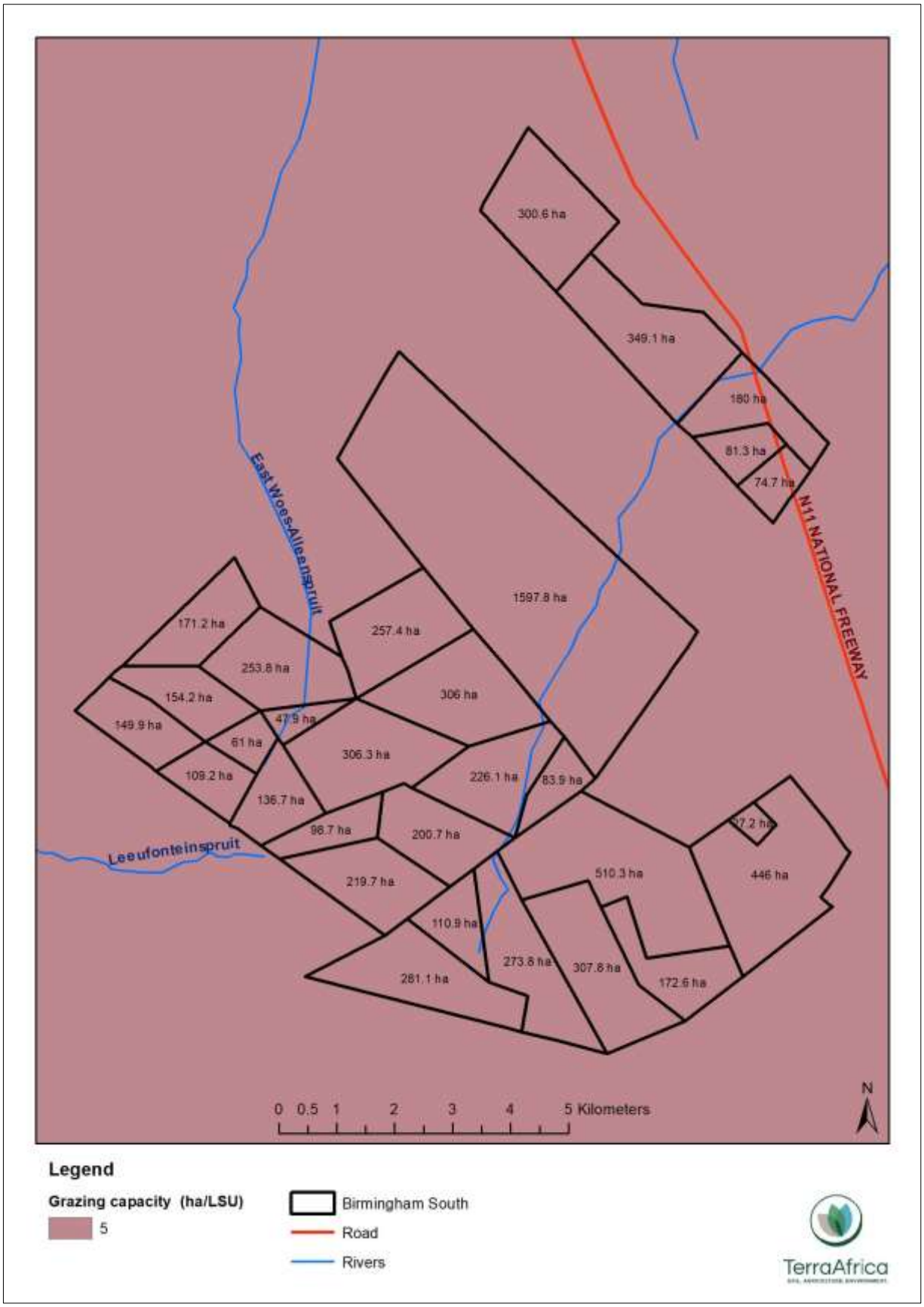

Figure 35 Grazing capacity of the Birmingham South area and that of the surrounding area (DAFF, 2018)

9.13 AIR QUALITY

An Air Quality Assessment will be undertaken for the proposed project and the results of this study will be included in the EIAr/EMPr.

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.

The proposed project falls within the Highveld Air Quality Priority Area (HPA). Existing key sources of air pollutants for the project area includes:

- Neighbouring mining activities (north and north-west of the MRA);
- Vehicle dust entrainment on unpaved roads (surrounding areas);
- Commercial agricultural activities (surrounding areas); and
- Industrial activity, including the Hendrina and Komati coal fired power stations, and associated activities (ash dams).

Air quality monitoring data was obtained from the South African Air Quality Information System (SAAQIS) to determine background concentrations for PM10 and PM2.5 in the area. The closest air quality monitoring station is located at the Kwazamokuhle High School in Hendrina (~14km south-east of the MRA). Data for PM10 and PM2.5 concentrations was available for the period 01 February 2018 to 17 October 2019. Based on this data, the daily average PM10 concentrations ranged 1-111 µg/m3 and PM2.5 concentrations ranged 0-47 µg/m3. Several exceedances (>4) of the South African National Standards for PM10 and PM2.5 daily concentrations were recorded; which suggests that background ambient particulate matter concentrations are relatively high in the area. This is, however, expected due to the existing emission sources in the area, such as the Hendrina Power Station, coal mining activities, vehicle dust entrainment on unpaved roads and commercial agricultural activities.

9.14 NOISE

A Noise study will be undertaken for the project and included in the EIAr/EMPr. Potentially sensitive receptors, also known as noise-sensitive developments (NSDs), located within or close to the proposed mining area will

be identified using Google Earth®. All potential NSDs within approximately 1,000m from the MR boundary will be identified.

The measurements mainly consisted of a number of short-term recordings around the project site to confirm the rural character of the site. While traffic on the N11 is audible closer to the road, areas further away have a high potential to be quiet, even though wind-induced noises may influence the measurements.

9.15 BLASTING ASSESSMENT

Blasting is common in the coal mine industry to remove overburden so that the exposed coal can be mechanically excavated. The ground vibrations produced by blasting are often felt by residents surrounding the mines. The impacts related to blasting induced vibration, such as air blast, fly rock, dust, and fumes need to be evaluated. Their impact on structures, people and animals also need to be evaluated.

The following mitigating measures are being implemented to minimise impacts associated with blasting and vibrations:

- A drilling and blasting standard operating procedure (SOP) shall be developed for the mine;
- A 20-m cut depth in the pit is mined so as to reduce the amounts of explosives used at any one time;
- A pre-and post-blast checklist is completed in by the responsible blaster and signed off by the responsible managers.
- Only single hole blasts are undertaken to reduce air blast and vibrations;
- Pre-spilt blasts are utilised to ensure the primary blast energy is contained within the blast area therefore reducing ground vibrations;
- Only a trained and certified blaster with certified blasting assistants are used;
- Blast designs are continuously re-evaluated according to prevailing conditions and geological conditions; and
- Climatic conditions and time of day are considered before a blast is undertaken.

A Blasting Impact Assessment will be undertaken and included in the EIA/EMPr phase of the project.

9.16 VISUAL

At present the visual character of the area is dominated by agricultural activities (maize cultivation and grazing of cattle). The Hendrina Power Station lies north-west of the project area. Part of mine site boundary area lies adjacent to the N11 highway. The infrastructure related to the mine is limited in height and does not involve any facility to a height of greater than approximately 50m. The undulating nature of the surrounding landscape should be effective in concealing the mine related infrastructure from the surrounding area at present. However, a Visual Assessment will be undertaken for the Birmingham Project and results will be discussed in the EIAr/EMPr.

9.17 ARCHAEOLOGY AND HERITAGE 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.

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

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

Due to the fact that the underlying Vryheid Formation sediments and coal beds will only be exposed during the proposed mining operations and associated infrastructure development, it is unlikely that any fossils will be observed before the mining takes place. A Heritage Assessment will be undertaken for the project and the results thereof included in the EIAr/EMPr.

9.18 SOCIAL-ECONOMIC ENVIRONMENT

The following section provides a summary of the social and economic environment that may be influenced by the proposed project. Information in this section was sourced from Stats SA and the Integrated Development Plans (IDP's) for the Steve Tshwete Local Municipality as well as the Nkangala District Municipality. The information provided in the IDP's and the Stats SA website are based on a 2011 National census and well as the 2016 Community Survey[1].

According to the National Environmental Management Act (NEMA, 1998) environment refers to the surroundings in which humans exist. When viewing the environment from a socio-economic perspective the question can be asked what exactly the social environment is. Different definitions for social environment exist, but a clear and comprehensive definition that is widely accepted remains elusive.

The environment influences and constrains behaviour, but behaviour also leads to changes in the environment. The impacts of a project on people can only be truly understood if their environmental context is understood. The baseline description of the social environment will include a description of the area within a provincial, district and local context that will focus on the identity and history of the area as well as a description of the population of the area based on a number of demographic, social and economic variables.Table 17, presents a summary of the socio-economic aspects which may have a bearing on the proposed project.

[1] It is acknowledged that this data may be outdated as no more recent census has been undertaken (Stats SA) and in addition, the municipal IDP 2017-2022 is still in draft mode and may be updated after review.

Table 17: Summary of the socio-economic aspects (Steve Tshwete)

<table>
<tr><th>Aspect</th><th>Local Municipality</th></tr>
<tr><td>District Municipality</td><td>Nkangala District Municipality</td></tr>
<tr><td>Province</td><td>Mpumalanga Province</td></tr>
<tr><td>Municipal Area Size</td><td>6016 km^2</td></tr>
<tr><td>Local Municpality</td><td>Steve Tshwete</td></tr>
<tr><td>Number of Wards</td><td>29 wards</td></tr>
<tr><td>Population Size</td><td>229 831</td></tr>
<tr><td>Number of households</td><td>64 971 809</td></tr>
<tr><td>Estimated growth/change in population size from 2001</td><td>~4.76%</td></tr>
<tr><td>Population composition</td><td>Black African (73.6%), White (21.8%), Colored (2.6%), Indian or Asian (1.6%), Other (0.4%)</td></tr>
<tr><td>Languages</td><td>Main languages spoken are isiZulu, Afrikaans, isiNdebele, Sepedi and English</td></tr>
<tr><td>Age</td><td>Age group 0 – 14 comprising 25% of the total population and 15 – 64 comprising of 70.7%, while 4.36% are 65 years and above</td></tr>
<tr><td>Gender</td><td>48% female, 52% male</td></tr>
<tr><td>Education</td><td>
<table>
<tr><th>Education Indicators</th><th>Percentage</th></tr>
<tr><td>No Schooling</td><td>3,1%</td></tr>
<tr><td>Some Primary</td><td>37,8%</td></tr>
<tr><td>Completed Primary</td><td>5,8%</td></tr>
<tr><td>Some Secondary</td><td>31,1%</td></tr>
<tr><td>Completed Secondary</td><td>18,5%</td></tr>
<tr><td>Higher Education</td><td>2,2%</td></tr>
<tr><td>Not Applicable</td><td>1,5%</td></tr>
</table>
</td></tr>
<tr><td>Living Conditions</td><td>There are 64 971 households in the municipality, with an average household size of 3,3 persons per household.29,4% of households are headed by females.

62,2% of households have access to piped water inside the dwelling, 23,5% of households have access to piped water in their yard and 1,8% have no access to piped water.</td></tr>
<tr><td>Housing</td><td>The predominant settlement type is a house or brick structure, followed by informal settlements and traditional dwelling/hut structure. There has been an increase in the number of informal dwellings over the last twelve years, which is a concern to the municipality. Formalizing all informal settlements should be a priority to the municipality as the municipality loses income due to people in informal settlements not paying for services. STLM recognises that high migration and urbanisation rates mean that informal settlements in the municipality are likely to remain. However, the municipality is committed to ensuring that all households, including those located in informal settlements, have access to basic services and community amenities.</td></tr>
</table>

Energy	STLM is licensed to supply the following areas with electricity: Middelburg, Hendrina, Kwaza, Doornkop, Komati, Blinkpan and Koornfontein and comprises of the following divisions: Small consumer, Distribution and Planning and bulk connection. The provision of electricity within the municipality continues to decreased 0.7 between 2011 and 2016.
Access to water	Due to households increase between 2011 and 2016, the percentage of households with water and sanitation has decreased. The 2016 Community survey reveals that, 81.9 of households had access to potable water (household connections and communal stands) and 85.4% had flush and chemical toilets. In 2014, the Blue Drop Certified Systems awarded STLM a blue drop score of 97.1% (ranked 1st in the province, noting that the municipality continues to manage drinking water within their area of jurisdiction with distinction. STLM was ranked second in terms of waste water services in the Green Drop Report which was at 61.9%.
Nearby towns	Middelburg, Carolina, Pullens Hope and Bethal
Percentage employment and unemployment	107 069 people are economically active (employed or unemployed but looking for work), and of these. The unemployment rate of STLM decreased slightly from 19.7% in 2011 to 16.4% in 2015.
Largest Employing sector	Agriculture
Economic Sector Performance	Manufacturing, mining, finance, energy generation and agriculture are the main drivers of the municipal economic in STLM. These industries generate mass employment opportunities and are mainly in rural parts of this local municipality. The two main economic drivers and dominant industries are the mining and metal and steel manufacturing industries. Mining continues to grow despite key economic sectors being on the decline; with several mining operation being established. There are new prospecting and mining permit applications south of the N4. Tourism is showing exponential growth with a potential to grow even further attracting both domestic and international tourists. The centrality of its location to iconic tourist destination like the Kruger National Park, contributed to the growth of the industry. With 48 accommodation facilities, 51 resorts and other tourism amenities, the local industry has a potential to grow even

10 DESCRIPTION OF SPECIFIC ENVIRONMENTAL FEATURES AND INFRASTRUCTURE ON THE SITE

10.1 ENVIRONMENTAL FEATURES

A large part of the study site consists of cultivated lands and grazing areas. Other areas include wetlands/pans, roads and homesteads.

10.2 EXISTING INFRASTRUCTURE ON THE STUDY AREA AND IN CLOSE PROXIMITY

This is a new application and no current infrastructure has been developed that is related to the Mining Right Application. Existing infrastructure includes farm houses, sheds, farm dams and other agricultural infrastructure.

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)
- 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 18: Impacts during the both Construction phase activity specific impacts

ACTIVITY	ENVIRONMENTAL ASPECT	DESCRIPTION OF IMPACT	SIGNIFICANCE PRE-MITIGATION	PROBABILITY	DURATION
IMPACTS DURING THE CONSTRUCTION PHASE					
GENERAL IMPACTS					
	GEOLOGICAL AND SOILS	Soil erosion and soil compaction by heavy duty vehicles on site.	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
		Impacts of dewatering on the groundwater aquifer should water be abstracted from ground water during the operational phase.	Medium (-)	Probable	Long term

ACTIVITY	ENVIRONMENTAL ASPECT	DESCRIPTION OF IMPACT	SIGNIFICANCE PRE-MITIGATION	PROBABILITY	DURATION
IMPACTS DURING THE CONSTRUCTION PHASE					
GENERAL IMPACTS					
		Impacts on wetlands/pan as identified by the specialist investigations	High (-)	Definite	Permanent
	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 (including haul and access roads, ventilation shafts and development of conveyor belt).	Medium (-)	Possible	Long term
	EXISTING LAND USE	Possibility of mining activities and workers causing veld fires destroying veld and animals on the study area and on adjacent land, impacting on the livelihood of surrounding land owners and users.	Low (-)	Possible	Medium term
		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
		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 CONSTRUCTION PHASE					
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 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
		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

ACTIVITY	ENVIRONMENTAL ASPECT	DESCRIPTION OF IMPACT	SIGNIFICANCE PRE-MITIGATION	PROBABILITY	DURATION
IMPACTS DURING THE CONSTRUCTION PHASE					
GENERAL IMPACTS					
	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
		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 19: 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					
Underground Coal 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
		Impact on wetland/pan as a result of underground mining due to dewatering.	High (-)	Definite	Permanent
		Impact on surface and groundwater quality as a result of oxidation of sulphates in the coal and overburden	Medium (-)	Definite	Long 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
	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
	SUBSIDENCE	Subsidence may occur and impact any heritage features, biodiversity features, surface water features.	Low (-)	Probable	Long term

ACTIVITY	ENVIRONMENTAL ASPECT	DESCRIPTION OF IMPACT	SIGNIFICANCE PRE-MITIGATION	PROBABILITY	DURATION
IMPACTS DURING THE OPERATIONAL PHASE					
ACTIVITY SPECIFIC IMPACTS					
Loading, hauling and conveying RoM to Processing 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, tailings, etc.	Medium (-)	Definite	Long term
	AIR QUALITY	Increased dust pollution (soil and ore fines), vehicles on gravel roads and transport of RoM	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
	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

ACTIVITY	ENVIRONMENTAL ASPECT	DESCRIPTION OF IMPACT	SIGNIFICANCE PRE-MITIGATION	PROBABILITY	DURATION
IMPACTS DURING THE OPERATIONAL PHASE					
ACTIVITY SPECIFIC IMPACTS					
	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
		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

ACTIVITY	ENVIRONMENTAL ASPECT	DESCRIPTION OF IMPACT	SIGNIFICANCE PRE-MITIGATION	PROBABILITY	DURATION
IMPACTS DURING THE OPERATIONAL PHASE					
ACTIVITY SPECIFIC IMPACTS					
	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
	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 20: 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 closing of ventilation shafts.	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 GROUNDWATER	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
		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. - Sulphate pollution as a result of oxidation of sulphate bearing minerals and waste	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
		Impaction groundwater from the pollution plume associated with the oxidation of sulphate bearing minerals utilised during rehabilitation.	Medium (-)	Possible	Long term

ACTIVITY	ENVIRONMENTAL ASPECT	DESCRIPTION OF IMPACT	SIGNIFICANCE PRE-MITIGATION	PROBABILITY	DURATION
IMPACTS DURING THE CLOSURE AND POST-CLOSURE PHASES					
GENERAL IMPACTS					
		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
	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

ACTIVITY	ENVIRONMENTAL ASPECT	DESCRIPTION OF IMPACT	SIGNIFICANCE PRE-MITIGATION	PROBABILITY	DURATION
IMPACTS DURING THE CLOSURE AND POST-CLOSURE PHASES					
GENERAL IMPACTS					
		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
		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

ACTIVITY	ENVIRONMENTAL ASPECT	DESCRIPTION OF IMPACT	SIGNIFICANCE PRE-MITIGATION	PROBABILITY	DURATION
IMPACTS DURING THE CLOSURE AND POST-CLOSURE PHASES					
GENERAL IMPACTS					
		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 21: 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 infrastructure, re-seeding of rehabilitated areas.	GEOLOGICAL AND SOILS	Soil erosion, loss of agricultural potential	Medium (-)	Definite	Long term
	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

ACTIVITY	ENVIRONMENTAL ASPECT	DESCRIPTION OF IMPACT	SIGNIFICANCE PRE-MITIGATION	PROBABILITY	DURATION
IMPACTS DURING THE CLOSURE AND POST-CLOSURE PHASES					
PHASE SPECIFIC IMPACTS					
	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 22: 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
		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

ACTIVITY	ENVIRONMENTAL ASPECT	DESCRIPTION OF IMPACT	SIGNIFICANCE PRE-MITIGATION	PROBABILITY	DURATION
NO-GO ALTERNATIVE					
	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
	BIOLOGICAL, FAUNA AND FLORA	No impact on wetlands, pans or streams. No reduction in ecological function	Low (+)	Definite	Permanent
		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:

- surface subsidence due to underground mining and the impact this can have on water drainage and topography
- alteration of drainage patterns
- establishment of waste rock dumps.

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 surface infrastructure will be constructed.

The significance of this impact is medium in the unmitigated scenario. The processing of RoM will take place at the processing plant. 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. The impact on wetland and pans will be assessed in the EIA phase and possible offset will be investigated. The impact on wetland and pans is expected to be high.

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. Sulphate pollution is associated with the oxidation of sulphate minerals and the leaching, oxidation of these minerals.

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 activities will take place underground and with the construction of the ventilation shaft areas.

The potential impact could have a low 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:

- employment for local communities;
- 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 area is agriculture with residential houses and historical 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 underground 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 placement of infrastructure and mining activities in general, 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 N11 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 / infrastructures 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 23 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 23: Mitigation measures (Construction, Operational and Closure Phase)

Activity	Potential Impact	Possible mitigation	Potential for residual risk
Underground mining and establishment of infrastructure and the plant. 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. • Conduct biomonitoring 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. • Implementation of a biodiversity action plan to ensure that the undeveloped/disturbed areas within the property are properly conserved and maintained. • 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.	Medium

Activity	Potential Impact	Possible mitigation	Potential for residual risk
		• Establish a stakeholder communication and grievance mechanisms for the duration of the mining operation.	

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 7.1.4.

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 Birmingham 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.

13.1.1 LAND USE ALTERNATIVES

The following process alternatives will be taken forward for consideration in the EIA phase:

- Mining; and

- Mixed Land Use (Mining and Agriculture, including grazing).

13.1.2 MINING METHOD (TECHNOLOGY ALTERNATIVES)

The following process alternatives will be taken forward for consideration in the EIA phase due to the suitability of underground mining methods as a result of the depth of the coal:

- Bord and pillar mining.

13.1.3 ACTIVITY ALTERNATIVES

Both the mining option and the no-go option will be assessed in the EIA phase. 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 section of the proposed area.

13.1.4 LOCATION/LAYOUT/DESIGN ALTERNATIVES

The following location, layout or design alternatives will be taken forward for consideration in the EIA phase:

- The project comprises of a prospecting right (MP 30/5//1/1/2/1182 PR), located on remaining extent and portions 1, 3, 4, 7, 8 on the farm Boschmansfontein 182 IS, the remaining extent and portions 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 15, 16, 17, 18 Boschmanskraal 184 IS, remaining extent and portions 1 and 2 of the farm Bloemfontein 196 IS and portions 1, 2, 3, 4 and 5 of the farm Birmingham 197 IS. A conveyor belt system will be located on the border of Portion 5 and 11 of the farm Boschmansfontein 182 IS and the remaining extent of Boschmansfontein 562 IS, the border of the remainder of portion 1 of the farm Boschmansfontein 182 and portion 8, portion 1, portion 18 and portion 2 of the farm Boschmanskraal 184 IS, the border of the remaining extent and portion 3 and portion 1 of Birmingham 197 IS.
- 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.

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 24 below. These include:

- Air Quality;
- Wetland Delineation Study;
- Blasting and Vibration Assessment;
- Heritage Assessment;

- Hydrogeological Assessment (including Hydropedological Assessment);
- Hydrological Assessment (including water balance);
- Noise Study;
- Ecological Assessment;
- Geotechnical Assessment;
- Storm Water Management Plan (including floodlines and topography);
- Social Impact Study;
- Soils, Land Use and Capability and Agricultural Impact Study;
- Traffic Impact Assessment;
- Waste Assessment; 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 24 provides a description of the aspects to be assessed by the various specialists for the proposed Birmingham Project.

Table 24: Description of aspects to be assessed by specialists

Aspect	Specialist Study	Specialist	Terms of Reference

Surface water and Aquatic Ecology	Surface Water Assessment	Red Kite Environmental Solutions (Pty) Ltd	The scope of the surface water baseline and impact assessment study will be to:
			• Undertake a field visit to survey the affected watercourses;
			• Four (4) monitoring sites 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)
			• Four water samples will be taken in the affected rivers for water quality analysis;
			• Description of riparian vegetation composition;
			• 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 assessment report detailing the methodology and findings of the assessment, including the PES of the watercourses on site.
			
			The overall purpose of the surface water assessment report is to evaluate the potential impacts that the proposed infrastructure, or activities might have on the surface water on the property. The objectives and Scope of Work for the aquatic ecology component of the assessment are as follows:
			• Assess the ecological state of aquatic ecosystems;
			• Assess the spatial and temporal trends in ecological state;
			• Assess emerging problems;
			• Set objectives for rivers;
			• Assess the impact of developments;
			• Predict changes in the ecosystem due to developments; and
			• Contribute to the determination of the Ecological Reserve.
			The main long-term objective and goal of the biological assessment is to measure, assess and report on the health, status and possible trends related to the receiving environmental indicators representing the aquatic ecosystem associated with the project area.

Aspect	Specialist Study	Specialist	Terms of Reference
Water Balance	Water Balance Report	Red Kite Environmental Solutions (Pty) Ltd	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.
Air Quality	Air Quality Impact Assessment	Eco Elementum (Pty) Ltd	The purpose of this study will be to: • Study the available information relevant to the pre-and post-development ambient air quality pollution concentrations in the environment; • Identify the major existing air emission sources in the environment; • Identify the existing sensitive air pollution areas in the environment; • Estimate by means of measurements and integration of the results with those of any relevant existing information the present ambient air quality climate; • Identify the mining related processes and equipment that will cause the major contribution to the future air quality impact; • Dispersion modelling to compute ambient concentrations as a function of source configurations, and meteorological characteristics, calculating the spatial and temporal patterns in the ground level concentrations arising from the emissions of emissions sources. • Consider, evaluate and rate the potential air quality impacts; and • Propose relevant management and mitigation measures to lessen the anticipated impacts.
Noise	Environmental Noise Impact Assessment	Enviro Routes (Pty) Ltd.	The study will determine the potential noise impact on the surrounding environment due to the proposed development of a coal mine. The purpose of this study will be to: • Establish baseline conditions of the area; • Model noise generated by proposed activities through Measurements conducted at receptors (I&AP's or noise sensitive developments) in terms of SANS10103:2008, National environmental Act (Act No. 107 OF 1998), GN NO. 326 and GN R154 (National Noise Control Regulation) methodology. A minimum of 10-minute day and night measurements will be conducted (day/night as per SANS10103:2008).; • Determine impact of activities; • Identify gaps and limitations; • Establish mitigation and management measures
Visual	Visual Impact Assessment	Elemental Sustainability (Pty) Ltd	The scope of work for this Visual Impact Assessment will include: • Describe the existing visual characteristics of the proposed sites and its environs; • Viewshed and viewing distance using GIS analysis up to 15 km from the proposed structures; • Visual Exposure Analysis;

Aspect	Specialist Study	Specialist	Terms of Reference
			• Consider, evaluate and rate the potential visual impacts; and • Propose relevant management and mitigation measures to lessen the anticipated impacts.
Blasting and Vibration	Blast and Vibration Assessment	Blast Management & Consulting	The following scope of work is suggested and reported. • Site Review and Information Capture • Modelling and report • A detailed EIA study report will be prepared and presented using data captured and information provided. The following aspects will be considered and presented as different sections in a final report: 1 Introduction 2 Background information of the proposed site 3 Mining operations and / or Blasting Operation Requirements 4 Site specific aspects applicable: a. Ground vibration explanation, prediction, modelling and related impacts b. Air blast explanation, prediction, modelling and related impacts c. Fly-rock explanation, prediction, modelling and related impacts d. Noxious fumes Information 5 Impact Evaluation 6 Mitigations and recommendations 7.Conclusion
Groundwater	Groundwater Impact Assessment	Geo Pollution Technologies – Gauteng (Pty) Ltd	The following scope of work as per the requirements for an EIA assessment and a water use license application will be undertaken: • Assessments of potential impacts associated with the proposed mining on the receiving environment as well as the cumulative impact of the entire operation • Hydropedological assessment • Geohydrological report A hydrocensus/site visit and discussion with relevant mine personnel is the most appropriate way of collecting information. The desktop study and fieldwork will consist of the following: • Conduct a desk study to apprehend the current state of knowledge. • Gathering of existing information such as previous groundwater balance studies, mine void volumes/geometry, inflow rates, previous general groundwater studies in the area, groundwater monitoring information, etc. • Gathering of monitoring data • Hydrocensus of the area (1-2km radius of the mining area) • Site visit and discussions with relevant personnel • Initial conceptual model ○ **Conceptual Modelling** ○ Using existing monitoring data, a conceptual model will be constructed with the aim of describing flow mechanisms and contaminant transport from proposed mining. ○ **Numerical Modelling**

Aspect	Specialist Study	Specialist	Terms of Reference
			○ Predictive modelling pre-mining for impact prediction will be done to quantify potential impacts from mining: ○ Groundwater flow, transport modelling to predict the impacts of the mining on groundwater quantity and quality in the region of the mine (Positive and negative). ○ Hydropedological modelling to assess impacts on wetlands. • A groundwater management and a monitoring network plan will be included in the report. • **Reporting** A report detailing the findings of the study will provided in the format of regulations regarding the procedural requirements for water use licence applications and appeals, specialist groundwater study.
Waste Classification	Waste Classification	Red Kite Environmental Solutions (Pty) Ltd	The overall objective of the assessment will be to perform a waste classification as per the General National Regulation 635 of the Waste Act 59 of 2008.
Heritage	Heritage Impact Assessment	Tobias Marais.	Phase 1 Heritage Impact Assessment (HIA) for the proposed mining right
Biodiversity Assessment	Biodiversity Impact Assessment	Red Kite Environmental Consultants (Pty) Ltd	The terms of reference for this bird impact assessment study will be as follows: • To qualitatively and quantitatively assess the significance of the avifaunal habitat components, and current general conservation status of the property; • To comment on ecologically sensitive areas; • To comment on connectivity with natural vegetation and habitats on adjacent sites; • To highlight and assess potential impacts of the proposed development on the avifauna of the study site, and • To provide management recommendations to mitigate negative and enhance positive impacts should the proposed development be approved
			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;

Aspect	Specialist Study	Specialist	Terms of Reference
			• 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; • 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.
Pans and Wetlands	Wetland Impact Assessment	Verdant Environmental (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.
Land Capability	Assessment of the land Capability	Terra Africa	• The entire Birmingham Prospecting Right 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. • Three possible conveyor belt alignments (approximately 2.5 km in length each) will be surveyed in detail together with the 150 ha of land (within the Birmingham South area) where the surface infrastructure will be located. • The detailed 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.

Aspect	Specialist Study	Specialist	Terms of Reference
			○ The report will also include a Soil Management Plan that will include soil quality monitoring parameters.
Social Assessment	Social Impact Assessment	Index Social Services	The purpose of a SIA is to identify and assess any possible and probable socio-economic related impacts that could manifest as a result of the proposed development; and then to propose workable mitigation measures to alleviate the negative impacts and enhance positive outcomes of the project. However, a SIA cannot be done in isolation and is highly dependent on inputs from the community and key role-players through the EIA public participation process (PPP) and where applicable impacts are aligned with Specialist studies done for the EIA. The analysis and rating of impacts further require input from the mining company through the SLP, MWP and other sources. Since the SIA is reliable on community perceptions and expectations, the information obtained through public and individual consultation is key to the rating process and for the formulation mitigation measures.
Traffic	Traffic Impact Assessment	Corli Havenga (Pty) Ltd.	This study would be conducted by traffic specialists from the consulting engineering firm Corli Havenga Transportation Engineer. The study would establish the baseline traffic volumes by means of traffic counts, calculate project-related contributions to baseline traffic volumes, evaluate the performance and layout of intersections, provide input on road conditions and the design of the access point, assess potential impacts associated with each of the project phases, recommend any road and safety improvements and develop a traffic management plan.
Geotechnical Assessment Floodline Determination and Engineering Designs	Geotechnical Impact Assessment	GFK Consulting Engineers (Pty) Ltd	Determination of floodlines for streams crossing the project area; Geotechnical assessment; 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.
Financial Provision	Financial Provision	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.

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 in the town of Hendrina. The report will be made available electronically via a downloadable link and a hard copy of the report will be made available in the town of Hendrina (as libraries will be opening within July 2020, it is recommended that the EIAr be placed at the public library together with a hand sanitiser, if permitted).
- Copies of the EIAR will be submitted stakeholders (Mpumalanga Parks and Tourism Agency, SAHRA and the Steve Tshwete Local Municipality), and government departments (DMRE and DHSWS) 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 advert 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 advert 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 the contact details of the EAP.

It is proposed to hold a public open day (outdoor venue with the location to be confirmed) 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. The number of people at the venue for the open day will be limited to ten people at any one time. Strict protocols with regards to the requirements of the Disaster Management Act (Act 57 of 2002), and all regulations thereunder, including a complete register, sanitation of hands etc. Posters containing information about the project will be made available for I&APs to view, 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.

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 25. A preliminary schedule for the EIA phase that aligns with regulatory timeframes is included below.

Table 25: EIA Tasks and Timing

Phase	EAP activity	Opportunities for Consultation and Participation		Schedule *
		Competent Authorities	**I&APs**	
Scoping Phase	Compile Scoping Report	-		August to September
	Distribute EIA for review	DHSWS	Review of EIA (30 days), Comments to EAP	8 October to 6 November 2020
	I&AP consultations	-	-	8 October to 6 November 2020
	Collate and respond to comments and finalise Scoping report	Provide final to DMRE	-	November 2020
Specialist studies	EAP to manage specialist activities and receive inputs for EIA.	-	-	September to November
EIA Phase	Compile EIA report	-	-	December 2020 to January 2021
	Distribute EIA for review	Provide copy to DMRE for records	Review of EIA (30 days), Comments to EAP	February to March 2021
	I&AP consultations	-	Consultation with I&APs	
	Collate and respond to comments and finalise EIA report	-	-	March 2021
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	April 2021
		DMRE Review (107 days)		
		Environmental Authorisation Granted / Refused		May2021
Decision	Notify registered I&APs of decision (within 14 days of date of decision)	-	-	May 2021
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	90-day process

- **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 23 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).

A Social and Labour Plan (SLP) has been developed for the proposed project and implemented. A Social Impact Assessment will be undertaken for the EIA phase of the projects. Recommendations by this specialist will be included in the EIAr and EMPr.

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 UNDERTAKINGS 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-

20 REFERENCES

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