CLOSURE PLAN IN SUPPORT OF THE ENVIRONMENTAL AUTHORISATION FOR THE PROPOSED PROSPECTING RIGHT APPLICATION FOR COAL ON PORTIONS 3-9, 11-18 AND THE REMAINING EXTENT OF THE FARM OLIFANTSLAAGTE 378 JS UNDER STEVE TSHWERE LOCAL MUNICIPALITY, MPUMALANGA PROVINCE.

PROJECT REFERENCE: MP30/5/1/1/2/15526PR

PROPONENT: MENAR CAPITAL

MENAR

FEBRAURY 2020

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LIST OF ABBREVIATIONS

BAR	Basic Assessment Report
DMR	Department of Mineral Resources
DWS	Department of Water and Sanitation
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme Report
EMS	Environmental Management System
IWULA	Integrated Water Use Licence Application
NEMA	National Environmental Management Act (Act 107 of 1998)
SANAS	South African National Accreditation System
SCC	Species of Special Concern

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EXPERTISE OF EAP

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Sarah Wanless	Summary of Experience: Sarah has 4 years' experience in Prospecting and drafting BARs and EMP reports. As part of her duties as an environmental officer she is tasked with assessing the social, environmental and heritage components of potential new projects, stakeholder management, GIS mapping and analysis and environmental management reporting for BARs and EMPs.
Tommy Olivier External Reviewer	Summary of Experience: Tommy completed his degree in Ecology as well as his BSc Honours degree with a thesis entitled, "Climate Change Awareness" at the University of Pretoria in 2009. From 2010 Tommy has been working as an environmental practitioner under Kenneth Smith at uKhozi Environmentalists. Tommy has managed a wide range of projects since becoming part of uKhozi Environmentalists. These projects include Section 16 prospecting applications, Water Use Licence applications as well as Environmental Impact Assessments for new

Name	Details
	developments and mines. Tommy also conducted the public participation processes for the projects he has managed. Tommy has been a member of the International Association for Public Participation (IAP2) since 2012.

1. INTRODUCTION

The proposed Olifantslaagte prospecting project is located in the Mpumalanga Province. The project falls within the Steve Tshwete Local Municipality under Nkangala District Municipality. The project area is located ~27km North East of Middelburg, refer to **Figure 1**. Menar Capital proposes to prospect for Coal, Pseudo coal, Sand and Clay on portions 3-9, 11-18 and the remaining extent of the farm Olifantslaagte 378 Js.

The prospecting activities will include the following activities:

- Literature survey- which will be a comprehensive review of published and unpublished work from secondary data sources. Time will be spent reviewing books, journals, government publications etc.
- Geological Mapping will be conducted such that accurate and meaningful structural and geological data may be derived from it and to communicate information gathered from the desktop study with mapping results.
- Borehole planning will involve drilling program design and implementation procedures to ensure that drilling is conducted as safe and economic as possible. This phase will include cooperation between the drilling contractor, services contractors, geologists and other technical specialists. The planning process will also ensure that the health and safety of all working on the drilling sites and the environment are protected.
- All core samples collected throughout drilling will be submitted to a SANAS-accredited laboratory for comprehensive analyses and metallurgical recovery tests aimed at determining coal quality. The coal samples will be analysed for moisture, ash, volatile matter, fixed carbon, calorific value and sulphur.
- Geophysical wireline logging: Down hole geophysics will be conducted on specific boreholes to allow for stratigraphic correlation, for core recovery calculations and to aid in the interpretation and sampling of the various coal seams. Wireline logging is performed by lowering a 'logging tool' on the end of a wireline into a borehole and recording physical properties using a variety of sensors.
- Geological 3D modelling: After the extent and development of the coal seams are investigated by drilling, the acquired data will be modelled using geological modelling software. Geological 3D modelling includes integration of diverse types of observations into 3D geo-models using geological mapping data, borehole data and interpretations and any other field data.

- Environmental management and rehabilitation: Environmental management will include the maintenance and improvement of the state of the environment to ensure that the ecosystem is protected and maintained for equitable use by future human generations, and also, maintain ecosystem integrity. Rehabilitation on the other hand includes returning the land to some degree of its former state after drilling.

These proposed prospecting activities requires an environmental authorization in terms of the National Environmental Management Act (Act No. 107 of 1998) (NEMA as amended) and will follow a Basic Assessment Process in terms of NEMA Regulations 982 (as amended). The NEMA Regulations Pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production Operation (GNR 114) requires that a final rehabilitation, decommissioning and mine closure plan is developed which includes the determination of financial provision to guarantee the availability of sufficient funds to undertake rehabilitation and remediation of the adverse environmental impacts of mining.

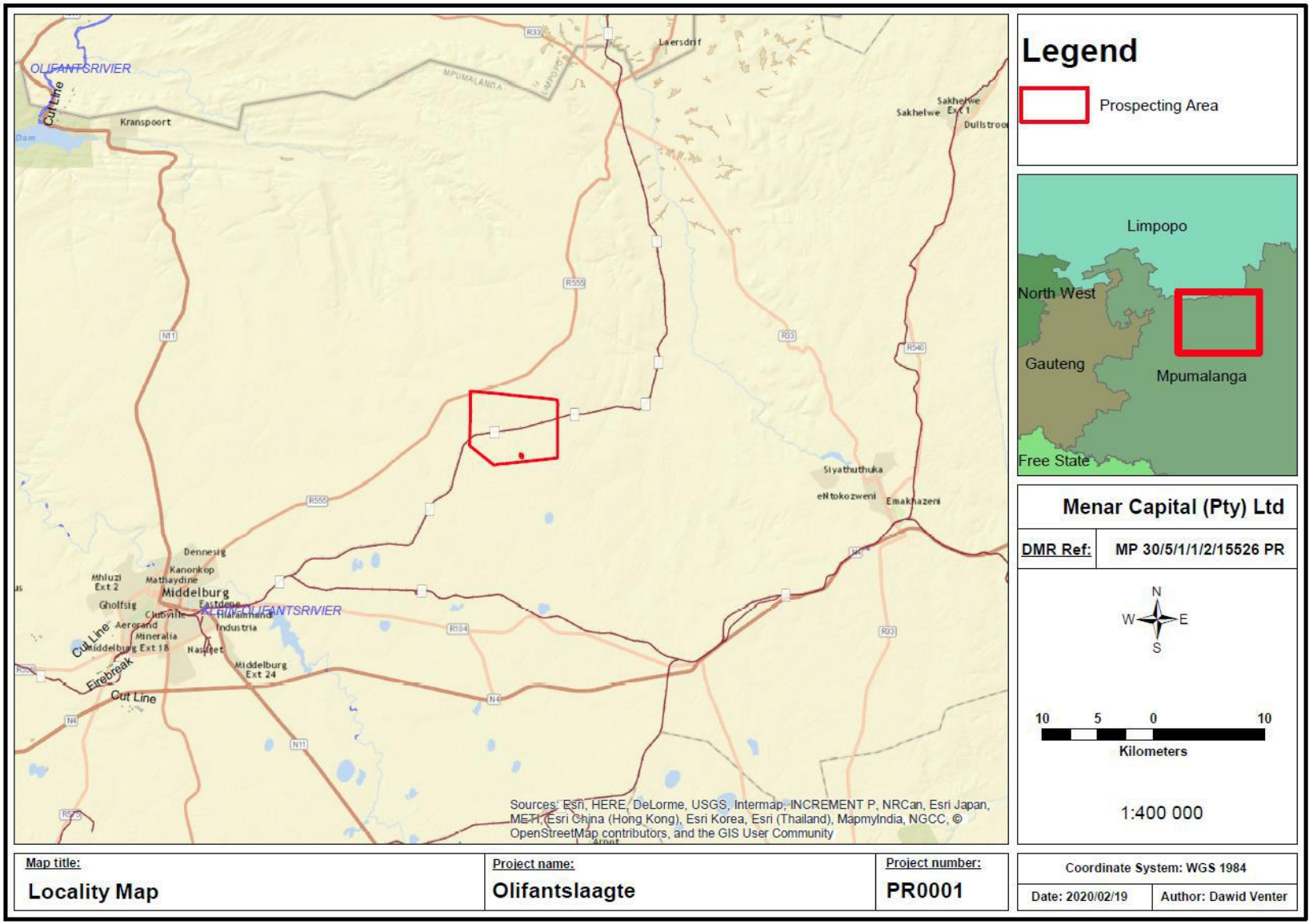

Figure 1 Locality map

1.1 Closure Objectives

Prospecting activities are anticipated to last for over a period of three years. The objective of this document is to present the final rehabilitation, decommission and closure plan for the proposed project. This closure plan therefore covers the footprint area of the proposed activities associated with the prospecting activities.

This report provides a plan that is measurable and auditable for Menar Capital and to the Department of Mineral Resources (DMR). A plan that takes into consideration the final land-use of the site, indicating what infrastructure and activities will ultimately be decommissioned, closed, removed and remediated and indicating monitoring, auditing and reporting requirements.

The objectives of the rehabilitation, decommissioning and closure plan are to:

- provide the vision, objectives, targets and criteria for final rehabilitation, decommissioning and closure of the project;
- explain the risk assessment approach and outcomes and link closure activities to risk rehabilitation;
- detail the closure actions that clearly indicate the measures that will be taken to mitigate and/or manage identified risks and describes the nature of residual risks that will need to be monitored and managed post closure;
- commit to a schedule, budget, roles and responsibilities for final rehabilitation, decommissioning and closure of each relevant activity or item of infrastructure;
- detailing the full closure costs for the life of project; and
- outlining monitoring, auditing and reporting requirements.

2 REGULATORY REQUIREMENTS

There are a number of legal and regulatory frameworks with which Menar Capital must comply with, the following are key legislation which could materially affect rehabilitation and closure:

Table 1 legislation and its Implications to the Closure Plan

LEGISLATION	IMPLICATIONS FOR CLOSURE
The Constitution of the Republic of South Africa. In terms of Section 24 of the Constitution "Everyone has the right to an environment that is not harmful to their health or well-being; and to have the environment protected, for the benefit of present and future generations."	Constitutional requirement to ensure that the Plan includes measures that protect the rights of people to an environment that is not harmful to health or well-being post closure.
National Environment Management Act (Act 107, 1998) Sections 28 (1) and (3) of NEMA set out the duty of care principle, which is applicable to all types of pollution and must be taken into account in considering any aspects of potential environmental degradation. Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment.	The measures required in terms of subsection (1) may include measures to - Investigate, assess and evaluate the impact on the environment; Inform and educate employees about the environmental risks of their work and the manner in which their tasks must be performed to avoid causing significant pollution or degradation of the environment; Cease, modify or control any act, activity or process causing the pollution or degradation; Contain or prevent the movement of pollutants or the causes of degradation; Eliminate any source of the pollution or degradation; or Remedy the effects of the pollution or degradation
Environmental Impacts Assessment Regulations, 2014 These regulations were developed for the preparation, evaluation, submission, processing and consideration of, and decision on, applications for environmental authorisations.	Any new EIAs or BAs for mining activities will be required to consider closure during planning and to include a closure plan and closure estimate to support an authorisation application.
National Environment Management: Waste Act (Act 59 of 2008) Part 8 of Chapter 4 of the Act indicates the requirement to identify the status and risk of contaminated sites and provides a legal mechanism for remediation activities to be instigated and controlled.	Contamination resulting from operational activities will require remediation, with the final soil quality meeting requirements as specified in the Acts Regulations.
NEMA Regulations pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production Operations. The purpose of these Regulations is to regulate and determine financial provision as contemplated in the Act for the costs associated with the undertaking of management, rehabilitation and remediation of environmental impacts from prospecting, exploration, mining or production operations through the lifespan of such operations and latent or residual environmental impacts that may become known in the future. The Regulations also include detailed descriptions of the wording required in the documentation to support the provisioning for liability using Bank Guarantees and Trust Funds. Finally, the legislation also provides detailed on the information to be contained in the following plans: Annual rehabilitation plan Final rehabilitation, decommissioning and mine closure plan Environmental risk assessment report Care and maintenance plan	Closure planning process will need to be expanded to include Annual rehabilitation plan, Final rehabilitation, decommissioning and mine closure plan, Environmental risk assessment report Care and maintenance plan.

The National Environment Management: Air Quality Act, 2004. This Act regulates atmospheric pollution. The Act came into full effect on 1 April 2010 and entrusts the Department of Environmental Affairs with the task of preventing pollution and ecological degradation, while at the same time promoting justifiable economic and social development. Metropolitan and District Municipalities are charged with issuing atmospheric emission licenses for certain listed activities. It must be shown that the best practical means are being employed to limit air pollution before these certificates will be issued. Penalties and criminal sanctions are imposed for noncompliance with the National Management: Air Quality Act.	Other aspects of the NEMAQA such as monitoring and application of management/mitigation measures may apply during closure.
The National Environmental Management: Biodiversity Act, 2004: The Act seeks amongst other things, to manage and conserve biological diversity, to protect certain species and ecosystems, to ensure the sustainable use of biological resources and to promote the fair and equitable sharing of benefits arising from bio-prospecting involving those resources. The NEM: BA includes a Regulation related to the management of threatened and protected species. A similar Regulation is applied to Threatened Ecosystems. NEM: BA has a set of norms and standards for the development of management plans for both species (e.g. Threatened or Migratory Species) and ecosystems (Endangered or Critically Endangered).	If relevant species or threatened ecosystems are presence on the mine concession, a management plan must be developed in alignment with these norms and standards.
National Water Act Section 19 of the NWA sets out the principles for "an owner of land, a person in control of land or a person who occupies or uses land" to: • Cease, modify or control any act or process causing pollution; • Comply with any prescribed waste standard or management practice; • Contain or prevent the movement of pollutants; • Eliminate any source of pollution; • Remedy the effects of the pollution; and • Remedy the effects of any disturbance to the bed and banks of a watercourse	This places the obligation to mitigate any aspects that cause or have caused pollution as well as to remediate any residual contaminated water at closure.
Mine Health and Safety Act, 1996: This Act deals with the protection of the health and safety of persons in the mining industry but has some implications for environmental issues due to the need for environmental monitoring within mine operations and maintenance of mine residue deposits.	All closure activities will have to be undertaken in a safe manner where the Health and Safety of all workers involved in closure activities is protected.

3 DESCRIPTION OF THE RECEIVING ENVIRONMENT

3.1 Geology

The prospecting area falls within the north-eastern part of the Witbank Coalfield. 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. In the Witbank coalfield the coal-bearing Vryheid Formation occurs at the bottom of the Ecca Group conformably to the underlying Dwyka Formation. The Dwyka Formation consists of tillite, siltstone and sometimes a thin shale development. The Ecca Group consists predominantly of sandstone, siltstone, shale and coal. The majority of the coal is mined in the Witbank Coalfield; of the 71 operating collieries in South Africa at the end of 2001, 39 (55%) of these were located in the Witbank Coalfield. In 2001, the coalfield accounts for 155.132 Mt (about 52.49%) of the total 295.546 Mt ROM production. The Witbank Coalfield seams have diverse characteristics, resulting in a range of potential markets/utilization in the power generation, export, domestic, metallurgical, liquefaction and chemical sectors. The No. 2 seam is a critical source of high-yield export quality steam coal while the No. 5 seam is the source of metallurgical coal for the local steel industry. The lower grade coals are consumed domestically by Eskom for power generation.

The Vryheid Formation in the Ecca Group contains five bituminous coal seams, numbered as No. 1 to No. 5 from bottom to top. The distribution of the No. 1 and 2 Seams is determined by the pre-Karoo topography, while the Nos. 4 and 5 Seams extent is controlled by the present-day surface. In some areas of the Witbank Coalfield, the No. 1 Seam is a source of high-grade steam coal suitable for export after beneficiation. The No. 1 Seam frequently has very low phosphorus content and in such cases, it is usually mined separately as metallurgical feedstock. The No. 2 Seam contains some of the best quality coal. It generally displays a well-defined zoning with up to seven (five in some areas) distinct coal zones of different coal quality with the three basal zones being mined mainly for the production of low-ash metallurgical coal and export steam coal. The upper part of the seam is generally composed of shale and not mineable. Selective mining takes place within the better-quality lower part of the seam. The No. 4 Seam is generally of poor quality and consists of predominantly dull to dull lustrous coal with the upper portion being of poor quality. Thus, mining is restricted to the lower 3.5 m portion of the coal-seam, which is mainly used as a power station feedstock and as domestic steam coal. The No. 5 Seam has been mined as a

source of blend coking coal and for metallurgical uses especially in the central Witbank area where it is of higher quality.

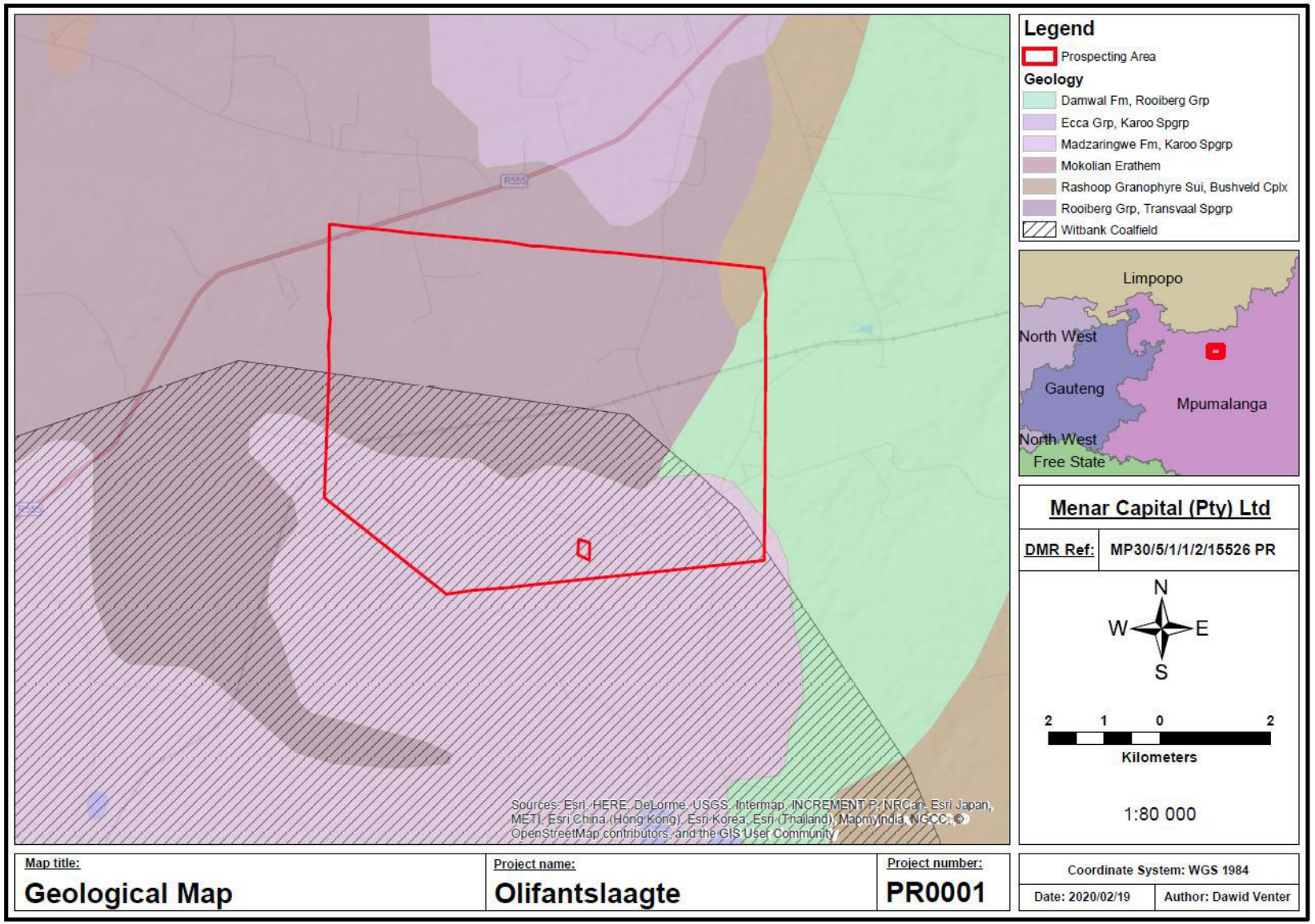

Figure 2 Geology of the Site

3.2 Climate

On average Middelburg receives about 572mm of rain per year, with most rainfall occurring during the summer months. The area receives the lowest rainfall (0mm) in June and the highest (105mm) in January. The monthly distribution of average daily minimum and maximum temperatures (Figure 6 below) shows that the summer temperatures for Middelburg can reach 25°C were as the winter maximum is in the area of 18°C. The region is the coldest during July when the mercury drops to 3°C on average during the night.

The area receives hail on occasions, usually from in October to December. Winds are generally moderate to light but may become gusty and fairly strong towards the end of the winter season. Strong winds are also associated with thunderstorms during the rainy season.

3.3 Topography

The gently undulating highland topography is typical of the central Mpumalanga province, with fairly broad to narrowly incised valleys of headwater drainages as shown in **Figure 3** below. The area's elevation ranges between 1549 and 1608 m above sea level with the lowest areas situated along the Klein Olifants River that cuts through the area on the eastern side

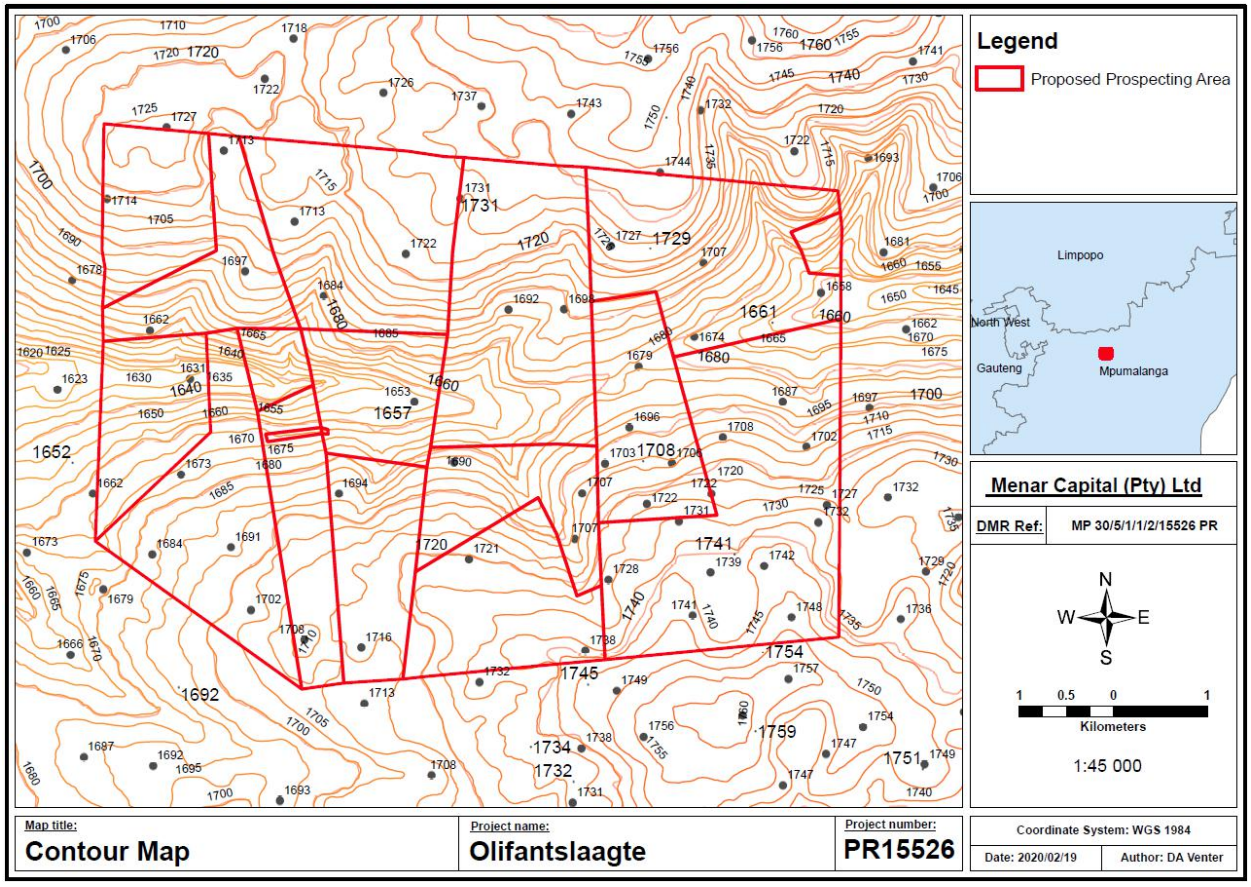

Figure 3 Site Topography

3.4 Soils & Land Capability

The land capability has not been described specifically for the area as the impact of prospecting will not significantly affect the land capability of the area. Land use in and around the prospecting area is mainly cultivation and natural lands. The proposed prospecting area is associated with grasslands and agricultural activities.

The land Capability for the Prospecting Area was determined using the EIA Screening Tool and is characterized as being “High” in terms of Agriculture Theme Sensitivity.

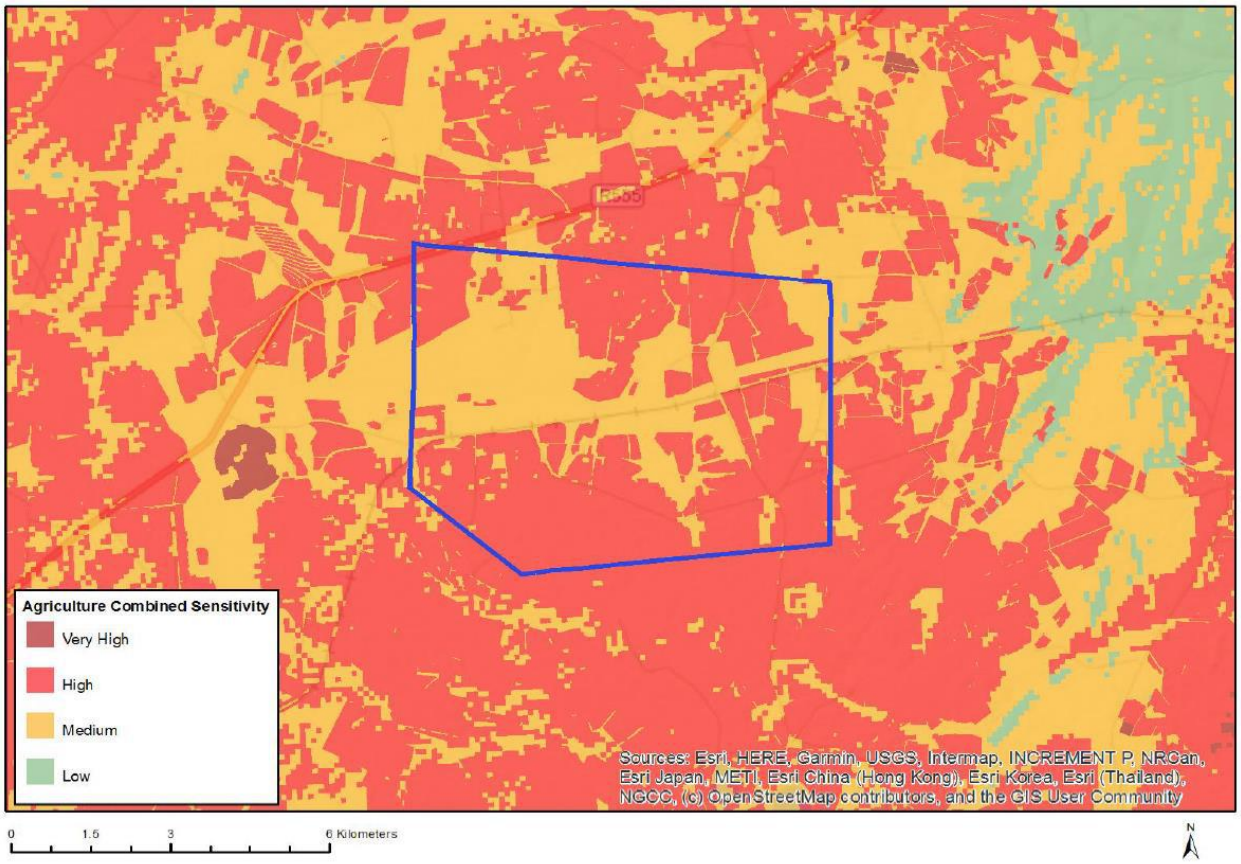

Figure 4 Agriculture Combined Sensitivity

Table 2 Agriculture Sensitivity

Sensitivity	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;01. Very low/02. Very low/03. Low-Very low/04. Low-Very low/05. Low
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;09. Moderate-High/10. Moderate-High
High	Old Fields;Land capability;09. Moderate-High/10. Moderate-High
High	Old Fields;Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
High	Old Fields;Land capability;01. Very low/02. Very low/03. Low-Very low/04. Low-Very low/05. Low
High	Subsistence Farming 1;Land capability;01. Very low/02. Very low/03. Low-Very low/04. Low-Very low/05. Low
High	Subsistence Farming 1;Land capability;09. Moderate-High/10. Moderate-High
High	Subsistence Farming 1;Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
Low	Land capability;01. Very low/02. Very low/03. Low-Very low/04. Low-Very low/05. Low
Medium	Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
Very High	Pivot Irrigation;Land capability;09. Moderate-High/10. Moderate-High
Very High	Pivot Irrigation;Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate

3.5 Natural vegetation

The project area corresponds to the Grassland Biome of South Africa known as the Rand Highveld Grassland. The majority of the area has been transformed to agricultural use and almost no natural biodiversity occurs within the project area. The project area is situated in the ecological type known as the Eastern Highveld grassland. The area is described as having slight to moderate undulating plains which includes some low hills and pan depressions. This vegetation type is described as short dense grassland dominated by the usual Highveld grass composition and scattered rocky outcrops with wiry, sour grasses and some woody species. Nearly 44% of the grassland in this biome has been transformed by cultivation, plantations, mines, and urbanisation and the building of dams. Mining and agriculture are the main activities occurring in the area that have impacted on the vegetation. Approximately 65% of the area on the affected property has been transformed into cultivated land. The remaining 35% is utilised for cattle grazing. Refer to **Figure 5** vegetation map below.

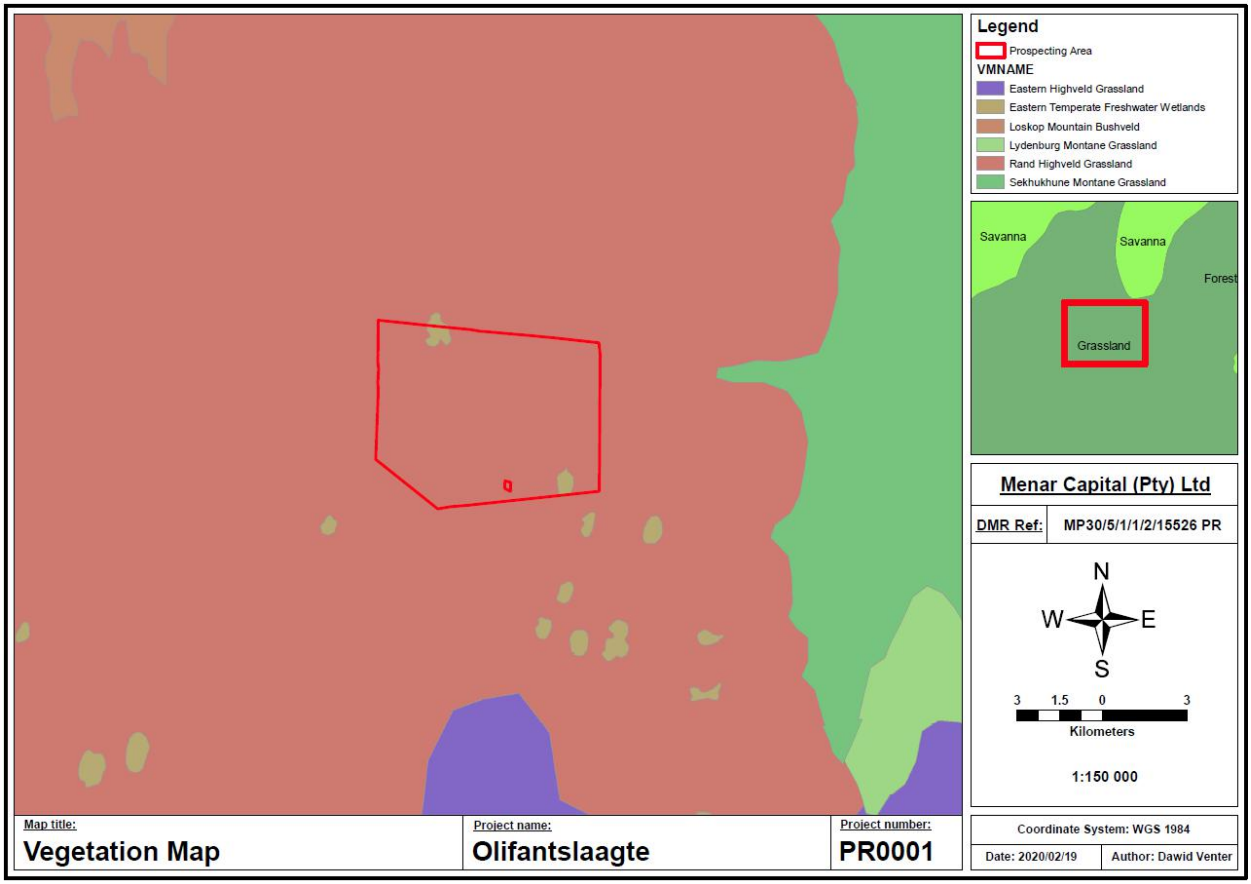

Figure 5 Vegetation Map

3.6 Fauna

Information in this section cannot be taken as definitive as there is a lack of faunal knowledge in the area, particularly as concerns insects of other invertebrates. However, as mentioned above, agricultural is the dominant land use in the project area and comprises approximately 80% of the land cover. Within these agricultural areas, sensitive and secretive fauna species are not expected to occur as it is unlikely for them to survive the in the smaller remnants of natural vegetation. These species are expected to have migrated to natural areas within the vicinity. Smaller fauna species including common rodent species, hares and smaller seed eating birds are expected to occur within the agricultural areas as they benefit from the easy supply of food and are able to survive within the production fields or smaller fragments of natural vegetation. Jackals are also common within agricultural areas due to the occurrence of these smaller fauna species.

3.7 Surface water

The project area falls within the quaternary catchment B32B which forms part of the Upper Olifants water management area. A number of land and water use activities that take place in the upper Olifants River system are of strategic importance to South Africa (e.g. mining, agriculture and power generation). These activities rely heavily on a variety of goods and services that they derive from the aquatic ecosystems in the area. The Olifants River (shown in **Figure 6** below) has, however, been described as one of the most polluted rivers in southern Africa, due to the number of anthropogenic stressors that are present in the catchment.

These stressors include intensive coal mining activities, coal-fired power generation, industrial activities (e.g., chemical manufacturers, chrome and steel smelters) and agriculture, combined with a general decline in the operation and management of wastewater treatment infrastructure, especially sewage treatment.

There is a non-perennial stream that cuts through the project area and later flows into the Selons River. Other surface water sources on the project area are small pans, dams and wetland areas as shown in Figure 9 below.

The prospecting area as well as the wider area consists of various wetlands which are classified as little to low sensitivity of wetlands as shown in **Figure 6** below. Various small pans, dams, perennial as well as non-perennial rivers are present over the extent of the proposed prospecting

area. It should be noted that no prospecting activities would be conducted in close proximity of any of the wetland and river features.

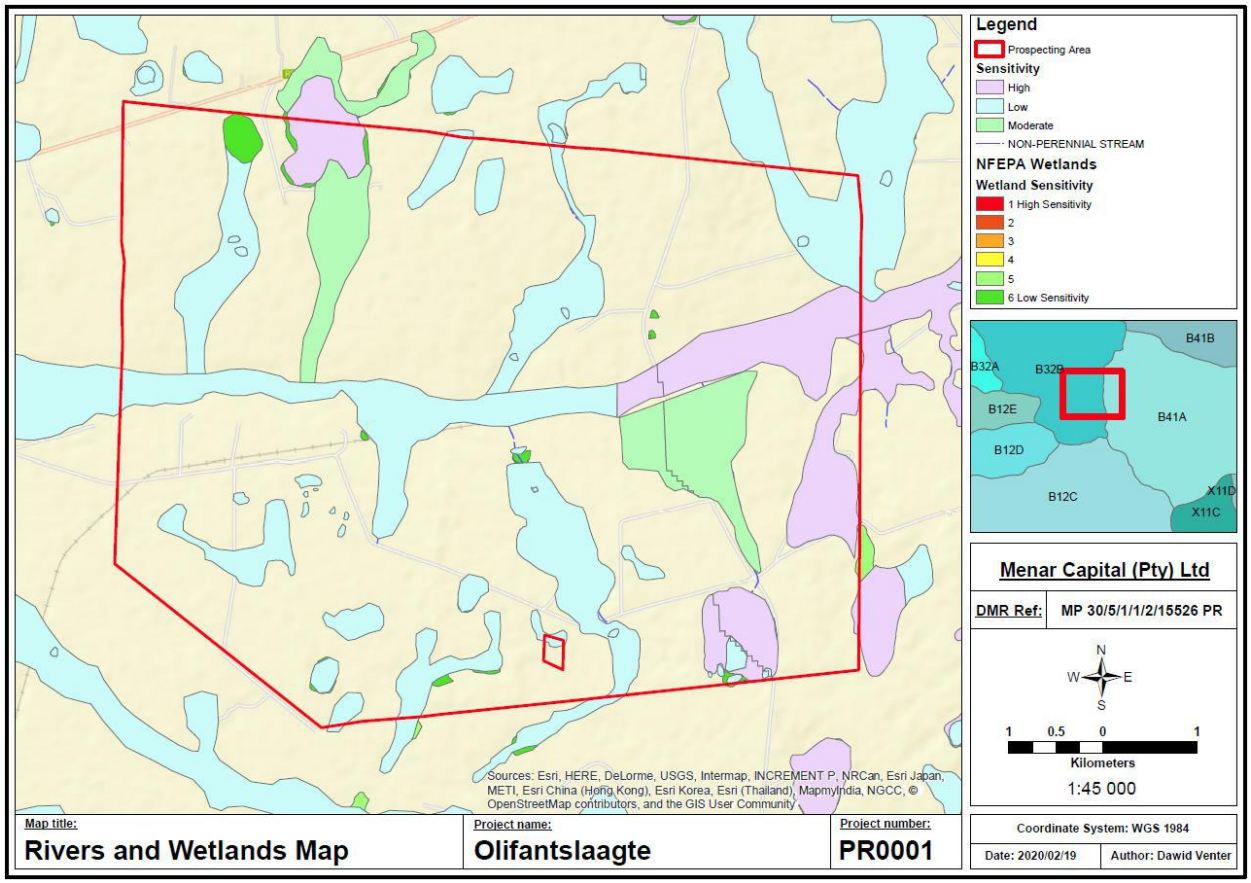

Figure 6 Surface Water on site

3.8 Groundwater

According to the 1:50 000 General hydrogeological Map (Johannesburg 2526), groundwater resources are widespread but limited with borehole yields generally between 0.1 and 0.5l/s. Groundwater occurrence is better developed along aquifers associated with the contact zones of the dolerite intrusions where yields of 0.5 – 2.0 l/s are likely to occur.

The aquifer represents an important source for base flow into the streams draining the area. The hydrogeology of the area can be described in terms of the saturated and unsaturated zones.

3.9 Regional socio-economic structure

Population Structure

As mentioned, the proposed prospecting area is located within the boundaries of the former Steve Tshwete Local Municipality (Middelburg Municipality) which falls within the Nkangala District Municipality. 11% of the household heads have not received any schooling whilst a further 4% have only attended school up to Grade 2. Over and above basic education, there is a need to improve educational facilities with the aim of ensuring an effective and conducive learning environment.

The provision of community educational facilities in Middelburg is fairly well distributed. However, there is only one tertiary institution i.e. the local FET College. At least one mortertiary institution concentrating on rendering practical skills is needed. The employment rate of Steve Tshwete Local Municipality is relatively low compared to the national average of between 25 and 30 %.

Health Sector

The health services in the urban areas are provided through hospitals and clinics. There is still, however, a need for additional clinics in areas such as Mhluzi due to the ever-growing population. The Municipality has one Provincial Hospital and one private hospital. There are only 4 permanent clinics in four wards in these areas. The bulk of the citizens living in the rural areas are serviced by mobile clinics which visit 69 farm portions.

The rate of HIV/AIDS has been a challenge in this region as it is a challenge in the entire country. The rate of infections is threatening the growth of the population which affects other areas of the society including the number of child-headed households, unemployment and exertion of pressure on the health facilities.

Economic Features

The Steve Tshwete Local Municipality’s economy is the second most dominant economy in the Nkangala region. The municipality is the host to a number of large industries as well as government departments and as a result strives to provide service to the satisfaction of its customers.

The agriculture, mining and manufacturing sectors are contributing a large amount to economic growth and employment creation in the municipality. Some of the most notable industries in this local economy are Columbus Steel and Eskom Power stations. The municipality is experiencing a number of emigrants from different municipalities, regions, provinces and other countries, which makes it difficult for the labour market to absorb all of them.

The municipality regards skills development as one of the focal areas in order to grow local economy and combat unemployment and poverty. The recent economic recession and climate change, has contributed to a number of jobs that have been lost especially in the mining, agricultural and manufacturing sectors. As a result, this contributes, amongst other factors, to the increase in unemployment and threats to food insecurity.

The Maputo Corridor runs through the municipality which will present some opportunities in terms of infrastructure development, which will attract more investment in industrial development.

4 CLOSURE VISION, OBJECTIVES AND TARGETS

The closure vision for the proposed project is to establish a safe, stable and non-polluting post-prospecting landscape that can facilitate integrated, self-sustaining and value generating opportunities, thereby leave a lasting positive legacy. This plan is aimed at achieving the following targets:

- Creating a safe, physically stable rehabilitated landscape that limits long-term erosion potential and environmental degradation;
- Sustaining long term catchment yield and water quality;
- Focusing on establishing a functional post-prospecting landscape that enables self-sustaining agricultural practices where possible;
- To encourage, where appropriate, the re-instatement of terrestrial and aquatic wetland biodiversity

5 ALTERNATIVES CONSIDERED

Considering that this is a prospecting application, the proposed Olifantslaagte prospecting project is not complex and the risks associated with prospecting are understood and can be mitigated at

closure. Alternative options for closure are limited. There are only two options that have been considered as activity alternatives for the closure plan:

Preferred Alternative: Closure/ Backfill of boreholes with overburden removed during drilling

Alternative 1: To Leave boreholes open, in-order to allow for groundwater recharge by surface run-off.

5.1 Preferred Alternative: Rehabilitation/ Backfill of boreholes

Rehabilitation is the restoration of a disturbed area that has been degraded as a result of activities such as mining, road construction or waste disposal, to a land use in conformity with the original land use before the activity started. This also includes aesthetical considerations, so that a disturbed area will not be visibly different to the natural environment. This also involves maintaining physical, chemical and biological ecosystem processes in degraded environments, hence the preferred option of backfilling the boreholes with the overburden removed during development and cover with growth medium to establish vegetation. This option has several advantages as discussed below:

Advantages

- The site will be aesthetically acceptable;
- The site will blend in with the environment;
- The site will go back to being a suitable habitat for fauna and flora;
- The site will be safe and pollution free;
- Revegetating the site will ensure that the site in non-erodible.

Opting for alternative 1, which is to leave boreholes without backfilling poses a risk in that, these boreholes may fill in with water, which may become attractive to wildlife and communities leading to drowning and the risk of being trapped in the declines. To mitigate these risks, it is necessary to backfill. Treatment technologies should be used to prevent decanting.

6 CLOSURE ASSUMPTIONS

This closure plan has been developed based on limited available information including environmental data. Some of the information currently available may need to be supplemented during the operational period. Therefore, a number of assumptions were made about general conditions, and closure and rehabilitation of the facilities at the site to develop the proposed closure actions. As additional information is collected during operations, these assumptions will be reviewed and revised as appropriate.

The assumptions used to prepare this plan include the following:

- The closure period will commence once the last planned weight of coal has been extracted from the site for laboratory testing;
- The proposed prospecting sites will be adhered to minimize the potential impacts;
- Vegetation establishment will be in line with a project area's indigenous vegetation
- Water management infrastructure developed for the operational phase will be retained for closure /end of the life of the project as necessary;
- There are limited opportunities for any infrastructure to be built on site and if any infrastructure is built, it will be of limited benefit to the community. Therefore, all buildings will be demolished;
- All hazardous and domestic waste will be transported offsite for disposal in licensed landfills;
- No roads are anticipated to be constructed to access the site, existing roads will be used as far as possible. Where access tracks have been developed in cases where there are no roads, these will be rehabilitated and closed as part of normal closure actions.

7. FINAL LAND USE

Post closure land use, will return to being agricultural activities. The built-up environment on these farms will not be disturbed during prospecting activities and these will continue to exist post closure.

8. CLOSURE AND REHABILITATION ACTIVITIES

The rehabilitation actions intended to be undertaken at the end of the life of the proposed prospecting activities are described below. These actions are designed to comply with the objectives of this plan which are derived from NEMA GN 1147.

8.1 Boreholes

Closure of boreholes will entail backfilling with overburden stripped ahead of prospecting activities. All overburden should be replaced into the void and the final surface reshaped to simulate surrounding topography while ensuring that the surface is free draining.

Once backfilling is complete a growth medium cover will be placed and vegetation will be established. There may be a requirement to include sacrificial erosion protection measures on the surface while vegetation is being established.

8.2 Roads and parking areas

Existing roads will be used as far as possible. Closure actions concerning roads and parking areas will include:

- Removal of all signage, fencing, shade structures, traffic barriers, etc.;
- All ‘hard top’ surfaces to be ripped along with any concrete structures;
- All potentially contaminated soils are to be identified and demarcated for later remediation; and
- All haul routes that have been treated with saline dust suppression water need to be treated, with the upper surface ripped and removed to designated contaminant disposal areas.

8.3 Remediation of Contaminated Areas

All soil, contaminated with hydrocarbons, will be identified, excavated, if possible, to at least 200 mm below the contaminated zone and then treated.

- All tanks, pipes and sumps containing hydrocarbons will be flushed or emptied;
- Removed soils will be managed as determined by the nature and extent of the contamination;

- Liquid storage tanks will be emptied, the structure removed/demolished and sub-surface holes filled; and
- All equipment in which chemicals have been stored or transported will be cleaned and disposed of in a suitable disposal facility.

8.4 Vegetation

Successful revegetation will help control erosion of soil resources, maintain soil productivity and reduce sediment loading in streams utilizing non-invasive plants that fit the criteria of the habitat (e.g. soils, water availability, slope and other appropriate environmental factors). Invasive species will be avoided and the area will be managed to control the spread of these species.

To counter the effects of erosion, naturally occurring grassland species will be planted on slopes. These species will provide soil holding capacity and reduce runoff velocity. The flatter areas will be re-vegetated with the objective of creating a sustainable ecosystem. The occurrence of protected plant species will need to be determined before vegetation is removed and the required permits will be obtained for either destruction or relocation.

8.5 Waste Management

Waste management activities will include:

- Hazardous waste will be managed as per the Minimum Requirements for Handling, Classification and Disposal of Hazardous Waste.
- Non-hazardous will be disposed in the nearby licensed landfill site;
- Scrap and waste steel will be sold to recyclers.
- It may be necessary to fence temporary salvage yards for security reasons, particularly where these are located close to public roads.

9. ENVIRONMENTAL RISK ASSESSMENT

Risks associated with the closure of the prospecting activities are described and a determination was taken to assess the nature of the risk and then risk is ranked according to predetermined

criteria for probability and consequence. Five categories were considered to describe the nature of the risk. The nature of the risk was assessed to fall into one of the following categories:

- Health and Safety
- Environment
- Financial
- Legal and regulatory obligations
- Reputational, Social or Community

Once the risks had been captured the probability of the risk occurring as well as the consequence of the risk occurring were rated according to the criteria presented below. A matrix listing the probability and consequence is then used to numerically rank the risk and determine whether the risk level is: High, Moderate to high, Moderate, Moderate to low or Low.

Table 3 Significance rating

Score out of 100	Significance
1 to 20	Low
21 to 40	Moderate to Low
41 to 60	Moderate
61 to 80	Moderate to high
81 to 100	High

Table 4 Methodology

The status of the impact		
Status		Description
Positive:		a benefit to the holistic environment
Negative:		a cost to the holistic environment
Neutral:		no cost or benefit
The duration of the impact		
Score	Duration	Description
1	Short term	Less than 2 years
2	Short to medium term	2 – 5 years
3	Medium term	6 – 25 years
4	Long term	26 – 45 years
5	Permanent	46 years or more
The extent of the impact		
Score	Extent	Description
1	Site specific	Within the site boundary
2	Local	Affects immediate surrounding areas
3	Regional	Extends substantially beyond the site boundary
4	Provincial	Extends to almost entire province or larger region
5	National	Affects country or possibly world
The reversibility of the impact		
Score	Reversibility	Description
1	Completely reversible	Reverses with minimal rehabilitation & negligible residual affects
3	Reversible	Requires mitigation and rehabilitation to ensure reversibility
5	Irreversible	Cannot be rehabilitated completely/rehabilitation not viable
The magnitude (severe or beneficial) of the impact		
Score	Severe/beneficial effect	Description
1	Slight	Little effect - negligible disturbance/benefit
2	Slight to moderate	Effects observable - environmental impacts reversible with time
3	Moderate	Effects observable - impacts reversible with rehabilitation
4	Moderate to high	Extensive effects - irreversible alteration to the environment
5	High	Extensive permanent effects with irreversible alteration
The probability of the impact		
Score	Rating	Description
1	Unlikely	Less than 15% sure of an impact occurring
2	Possible	Between 15% and 40% sure of an impact occurring
3	Probable	Between 40% and 60% sure that the impact will occur
4	Highly Probable	Between 60% and 85% sure that the impact will occur
5	Definite	Over 85% sure that the impact will occur
The Consequence		= Magnitude + Spatial Scale + Duration + Reversibility.
The Significance		= Consequence x Probability.

Table 5 Outcome of Risk Assessment

Where Significance = Consequence x Probability															
RISK ISSUES DURING CLOSURE	**WHAT IS THE ROOT CAUSE OF THE HAZARD?**	**WHAT ARE THE CONSEQUENCES?**	**BEFORE IMPLEMENTATION OF CLOSURE STRATEGY**					**SIGNIFICANCE RATING**	**CONCEPTUAL CLOSURE STRATEGY**	**AFTER IMPLEMENTATION OF CLOSURE STRATEGY**					**SIGNIFICANCE RATING**
			E	**D**	**R**	**M**	**P**			**E**	**D**	**I**	**R**	**P**	
HEALTH AND SAFETY															
Boreholes or excavations which are not properly backfilled may pose health and safety risks such as injuries to animals and local community members accessing the site during post closure activities	Leaving excavations opened	Injuries and loss of livestock	**1**	**2**	**1**	**3**	**3**	**Negative Moderate Low risk (21)**	Once prospecting activities are completed, backfilling should be undertaken as soon as practicable possible	**1**	**2**	**1**	**3**	**2**	**Negative Low risk (14)**
ENVIRONMENTAL															
Operational and decommissioning activities may result in soil being contaminated.	Dismantling of oil storage tanks, and oil drips from machinery.	Change in soil properties	**1**	**2**	**1**	**3**	**3**	**Negative Moderate low risk (21)**	Operational impacts will be remediated as far as possible during operation phase. During closure, contaminated soils with coal particulates and hydrocarbon will be removed and disposed	**1**	**2**	**1**	**3**	**2**	**Negative low risk (14)**

									according to regulatory requirements.						
FINANCIALS															
Delaying closure once prospecting activities are complete may allow for vandalism and interference of infrastructure which may lead to costlier remedial measures being implemented when closure actions are undertaken.	Poor security on site	Loss of equipment	**1**	**2**	**3**	**3**	**3**	**Negative Moderate low risk (27)**	Appropriate security measures will be retained to secure infrastructure until infrastructure can be demolished.	**1**	**2**	**3**	**3**	**2**	**Negative low risk (18)**
Closure material balance not sufficient to implement closure actions leading to environmental impacts remaining unmitigated.	Poor storage of subsurface material	Loss of indigenous backfill material	**1**	**2**	**3**	**3**	**3**	**Negative Moderate low risk (27)**	Material designated for closure will be protected within the operational foot print of the site. However, in the event that insufficient closure material is available, alternative sources will be investigated.	**1**	**2**	**3**	**3**	**2**	**Negative low risk (18)**
Underestimating the closure quantum resulting in insufficient funds to mitigate impacts at closure. This may result in legal obligations not being met.	Underestimating impacts	Poor rehabilitation of site	**1**	**2**	**2**	**3**	**3**	**Negative Moderate low risk (24)**	Menar will continually evaluate closure liability and will adjust estimates as more information becomes available relating to operational impacts requiring	**1**	**2**	**2**	**3**	**2**	**Negative low risk (16)**

									mitigation, residual and latent closure risks, closure actions and rates for the implementation of the closure actions.						
REPUTATION, SOCIAL OR COMMUNITY															
Risk that labour expectations are not achieved if there are no livelihood replacement opportunities, leading to unrest of those who loose employment.	Closure of project	Loss of livelihood	**2**	**2**	**3**	**2**	**2**	**Negative Low risk (18)**	Continual engagement with internal stakeholders will be undertaken as described in the Social Labour Plan to assist with the transition to the post closure period.	**2**	**2**	**3**	**2**	**1**	**Negative low risk (9)**

10. CLOSURE COST ESTIMATION

The liability for closure of the aspects associated with the prospecting activities has been determined using the approach advocated by the Department of Mineral Resources (DMR) Guideline Document for the Evaluation of the Quantum of Closure-Related Financial Provisions (2005). The approach to calculating the closure quantum as specified in the DMR Guideline which was utilised in this assessment is as summarized in Table 12 below.

Table 6 Closure Quantum

No.:	Description:	Unit:	A Quantity	B Master rate	C Multiplication Factor	D Weighing factor 1	E=A*B*C*D Amount (Rands)
			Step 4.5	**Step 4.3**	**Step 4.3**	**Step 4.4**	
3	Temporary Access Roads	m^2	0	R34.05	1	1.1	R0.00
10	General Surface Rehabilitation	ha	0.5	R110 697.13	1	1.1	R60883.41
		Subtotal 1	**Weighing factor 2** (step 4.4) According to Peri-urban			**1.05**	**R63927.59**
		(Sum of total items 3 and 10 multiplied by **weighing factors**)					
1	Preliminary and General	Add 12% of Subtotal 1 if Subtotal 1 is less than R100,000,000.00					R7671.31
2	Contingencies	10% of Subtotal 1					R6392.76
		Subtotal 2					**R77991.66**
		VAT (15%)					R11698.75
		(Subtotal plus VAT)				**GRAND TOTAL**	**R89690.41**

11. MONITORING AND AUDITING

In terms of auditing and monitoring the following will be conducted:

- Internal monitoring, auditing and reporting – a review undertaken by Menar Capital to update the plan to account for changes to the environment and risk profile and to update the liability assessment to reflect liability at that point in time;
- External monitoring, auditing and reporting – a review undertaken by the financial auditors as part of the annual financial/accounting audit to determine that the plan is appropriate and that the quantum of the liability is included in the operations provisions;
- Legislated audits – these are the auditing requirements of the Act, Regulation, EMPr and EA. Pertinent aspects relating to closure, such as changes to the risk assessment, changes in closure options and changes in the quantum of the liability will be reported

The findings from the various audits will be captured in the company's Environmental Management System (EMS) and responsibilities and timelines allocated to the rectification of the findings, as practical. Once addressed, these findings will be closed out, only after a second party has assessed that the finding is appropriately addressed.

The objective of the monitoring programme will be to track the recovery of the site in accordance with the overall closure objectives. The anticipated monitoring will include:

- Surface water: Quality monitoring against parameters as required by DWS
- Groundwater: Quality monitoring of aquifers against the parameters required by DWS
- Erosion monitoring: This will take the form of developing a representative reference site on the disturbed footprints and undertaking visual and topographic assessments to determine erosion rate.
- Vegetation establishment: Vegetation condition will be monitored using standard field techniques to determine whether the vegetation has been established with a species composition and density similar to that of the site prior to prospecting activities.
- Photographic records should be maintained together with findings, follow up actions and close out records as part of the company's Environmental Management System.

12. CONCLUSIONS

Menar Capital will provide for the closure liability associated with the project through the purchase of a Bank Guarantee as allowed by the Financial Provision for Prospecting, Exploration, Mining or Production Operations Regulations, with the Bank Guarantee provided to the DMR following authorisation of the project.