mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

DRAFT BASIC ASSESSMENT REPORT

And

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATIONS IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 AND THE NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT, 2008 IN RESPECT OF LISTED ACTIVITIES THAT HAVE BEEN TRIGGERED BY APPLICATIONS IN TERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (MPRDA) (AS AMENDED).

NAME OF APPLICANT: NMX Construction Close Corporation

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FILE REFERENCE NUMBER SAMRAD: NW 30/5/1/3/2/ (10746) MP

IMPORTANT NOTICE

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

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

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

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

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

OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

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

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

(b) identify the alternatives considered, including the activity, location, and technology alternatives;

(c) describe the need and desirability of the proposed alternatives,

(d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine:

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

  (ii) the degree to which these impacts—

    (aa) can be reversed;

    (bb) may cause irreplaceable loss of resources; and

    (cc) can be managed, avoided or mitigated;

(e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to—

  (i) identify and motivate a preferred site, activity and technology alternative;

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

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

TABLE OF CONTENTS

LIST OF TABLES

PART A

PART B

LIST OF FIGURES

PART A

SCOPE OF ASSESSMENT AND REPORT

1. Contact Person and correspondence address

a) Details of

i) Details of the EAP

Name of The Practitioners:	Wesela Lucky Madzivhe
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e-mail address:	nditwanim@gmail.com/khuliso@mielelani.co.za

ii) Expertise of the EAP.

The EAP has a Bachelor of Science Degree in Geology and Geography (NQF 7- Hons Level).

Summary of the EAP's past experience

Mr Wesela Lucky Madzivhe has a solid 5 years' experience in Conducting EIAs. He has conducted EIAs for various projects including but not limited to Construction, Agricultural, Prospecting and Mining as well as Waste Management. He is currently working as an Environmental Control Officer whilst still involved in EIA Projects. His exposure to different working environment has greatly advanced his technical ability in identifying and assessing impacts as well as providing mitigation thereof. Working as an ECO has also improved his understanding of the impacts management as he has to monitor implementation of recommended Impacts Management strategies, from this role he has learnt the best practical strategies to manage and mitigate impacts.

b) Location of the overall Activity

Table 1-1: Project Location

Farm Name:	Portion of portion 200 of the farm Nooitgedacht 434 IP
Application area (Ha)	5 ha
Magisterial district:	District of Klerksdorp, North West Province.
Distance and direction from nearest town	The proposed project is 14.3 km West of Orkney.
21 digit Surveyor General Code for each farm portion	

c) Locality map

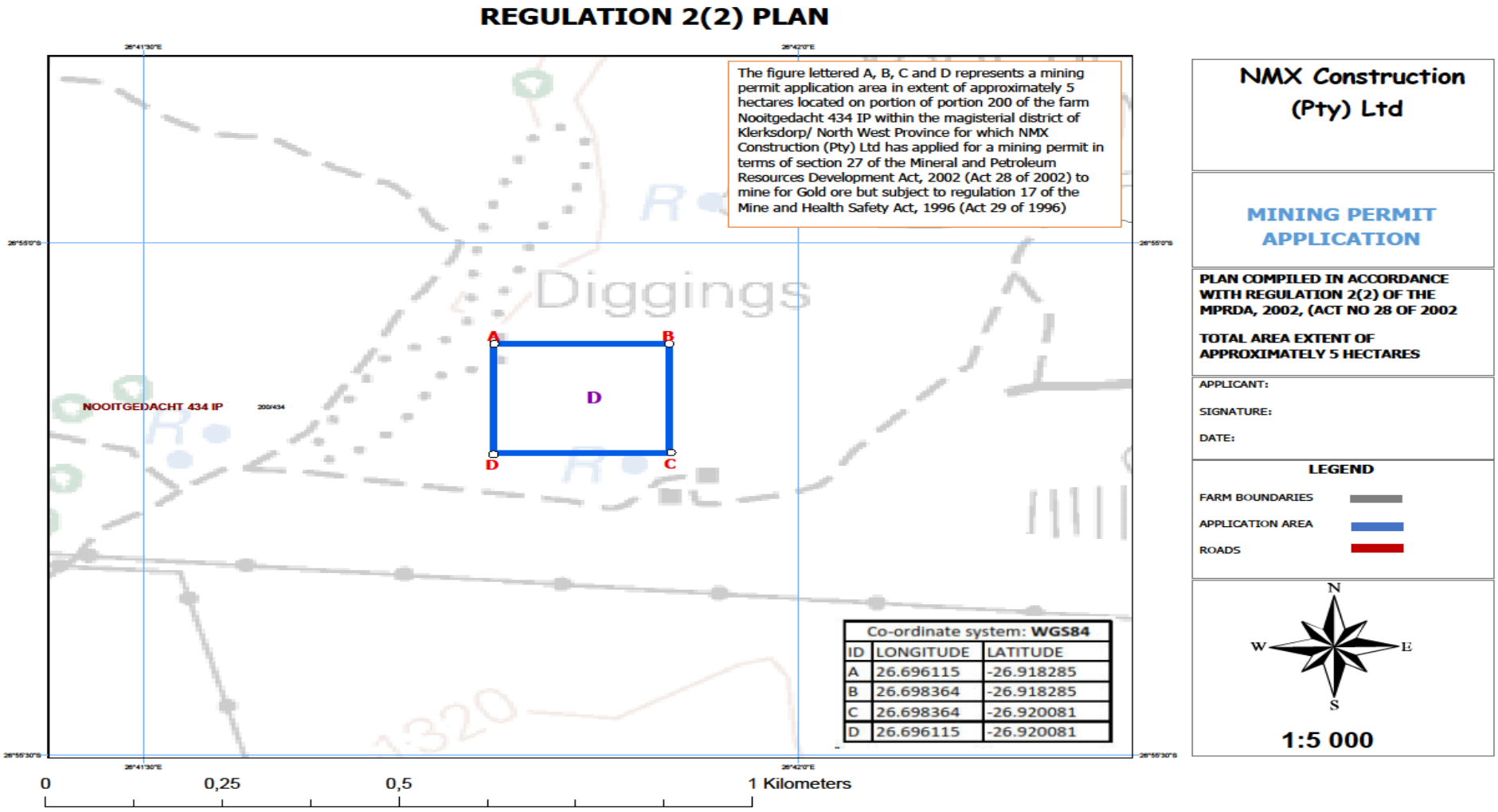

Figure 1-1: Site Locality Map

d) DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY

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

Figure 1-2: Site Plan

(i) Listed and specified activities

Table 1-2: Listed and specified activities

NAME OF ACTIVITY	Aerial extent of the Activity Ha or m²	LISTED ACTIVITY	APPLICABLE LISTING NOTICE	WASTE MANAGEMENT AUTHORISATION
For Mining of silica Gold Ore on farm land on the non-perennial river. No construction is required. Site will however be prepared for mining commencement. Extraction of Gold Ore will be facilitated through the use of an excavator and/or front end loader. **Activity 21:** Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including associated infrastructure, structures and earthworks directly related to the extraction of a mineral resource, 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).	**5 ha**	**X**	**GNR 327**	**X**

(ii) DESCRIPTION OF THE ACTIVITIES TO BE UNDERTAKEN

The proposed mining permit area will be covering 5ha of PORTION OF PORTION 200 OF THE FARM NOOITGEDACHT 434 IP. The mineral to be mined is Gold Ore. The method to be implemented is a very basic form of Open Cast Mining. Extraction of Gold Ore will be facilitated through the use of an excavator and/or front-end loader. The site will be demarcated (Figure 1-2 on page ii of this report) for mining and will not compromise any infrastructure. An excavator and/or front-end loader will be used to strip a 30cm layer of topsoil which will be stockpiled on a pre-determined area outside the watercourse along the banks for use in later rehabilitation. The excavator and/or front-end loader will excavate Gold Ore from the pit to a depth of 1m to 3m and stockpile outside the watercourse. The Gold Ore will be deposited onto the stockpile area within the permit site and loaded onto tip trucks by the front-end loader for transport off the site and for sale to the local market. The Gold Ore will therefore not be processed on site.

Figure 1-3: Typical Front-end loader stockpiling silica Gold Ore

Figure 1-4: Typical Haulage Truck Loading

❖ DURATION OF ACTIVITY

The mine will operate for a period of two years from the time of issuing of a mining permit, and thereafter will become renewable for three further consecutives one-year periods, which totals a maximum five-year operational period. **After which a Closure and Rehabilitation Plan will then be implemented** (Final Phase of mine life cycle) to ensure the proposed mining site is rehabilitated to an acceptable and mandatory condition.

❖ SITE PLANNING

Before site establishment, mine operation and closure and rehabilitation can occur, careful planning must take place which will lay the foundations and plan of action for the subsequent phases. This will ensure that impacts can be identified at the earliest stage possible and appropriate mitigation measures employed. This in order to prevent/ minimise impacts to acceptable levels. The Basic Assessment Report and associated Appendices, forms part of this process.

❖ SITE PREPARATION/ESTABLISHMENT

While no infrastructure development will occur on site, the site will however be prepared for mining commencement. These activities will include:

- ✓ Environmental training and awareness for workers;
- ✓ The removal and storage of topsoil that will be kept for the closure and rehabilitation phase;
- ✓ The demarcation of the mining site and 'no-go' areas;
- ✓ The erecting of signage and fences;
- ✓ The placement of a portable toilet, bins, spill kits and first aid kits;
- ✓ Facilitating the access road to mining site;
- ✓ Preparing equipment and vehicles for operation;
- ✓ Ensuring that there are no protected trees or fauna on site; and
- ✓ Implementing erosion control on site.

❖ MINE CLOSURE AND REHABILITATION

During decommissioning, the working areas will be rehabilitated and re-vegetated, as per the approach outlined in the closure/rehabilitated plan. It is important that the applicant and the landowner's liability for the site persist until such time as a closure certificate has been issued by the DMR, accordingly, once the vegetation has been established, a closure report will be submitted to the DMR.

Post-closure monitoring will assist in determining the success of the rehabilitation and also identify whether any additional measures need to be taken to ensure the area is restored to a reasonable and acceptable condition.

e) Policy and Legislative Context

Table 1-3: Policy and Legislative Context

Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context.
Constitution of South Africa, specifically everyone has a 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.	Public Consultation Report	The Mining activities will only proceed after effective consultation.
Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA) and the MPRDA Amendment Act, Act 49 of 2008	A mining permit was applied for with the Department of Mineral Resources.	The conditions and requirements attached to the granting of the mining permit will apply to the mining activities.
NEMA Environmental Impact Assessment (EIA) Regulations, 2017	BAR & EMPr	This basic Assessment Report is being undertaken in terms of the National Environmental Management Act as amended in order to determine any possible impacts on the environment and to propose sufficient mitigation in order to prevent harm on the environment.

Applicable legislation and guidelines used to compile the report	Reference where applied	How does this development comply with and respond to the legislation and policy context.
National Environmental Biodiversity Act The National Environmental Management Biodiversity Act (NEM:BA), 2004 (Act No.10 of 2004), provides for: (i) the management and conservation of South Africa`s biodiversity within the framework of the National Environmental Management Act, 1998; (ii) the protection of species and ecosystems that warrant national protection; (iii) the sustainable use of indigenous biological resources; (iv) the fair and equitable sharing of benefits arising from bio-prospecting involving indigenous biological resources; (v) the establishment and functions of a South African National Biodiversity Institute;	Impact Assessment	Impacts on the biodiversity have been identified and mitigation has been provided.
National Water Act The NWA (Act No. 36 of 1998)	Department of Water and Sanitation (DWS)	A Water Use License Application, or alternatively a General Authorisation (GA) will need to be applied for from the Department of Water and Sanitation (DWS), as the Gold Ore mining activity will take place within a watercourse.
Mine Health and Safety Act, 1996 (Act No. 29 of 1996);	Impact Management	Risk Impact Assessment to be conducted
Dihlabeng Municipality IDP & PSDF	Source of background demographic and socio-economic information	Identifies Needs, Desirability and Constraints of The Area And Community.
Vhembe District Municipality IDP	Source of background demographic and socio-economic information	Utilized as a source of demographic and socio-economic information for the Dihlabeng Local Municipality area.

f) Need and desirability of the proposed activities

In terms of the EIA Regulations the need and desirability of any development must be considered by the relevant competent authority when reviewing an application. The need and desirability must be included in the reports to be submitted during the environmental authorisation application processes. This section of the BAR and EMPr will indicate the need and desirability for the proposed mining project.

Mining industries are critical to South Africa socio-economic development. The Gold mining industry remains a cornerstone of the economy, making a significant contribution to the economic activity, job creation and foreign exchange earnings.

NMX Construction cc desktop studies have demonstrated that a viable mining operation can be established that would provide significant benefits to the local economy of City of Matlosana Local Municipality. The broader socio-economic benefits of the project include employment, skills development, local economic development through the availability of the Gold mineral, and increased business development for the area in generally.

NMX Construction cc expects that substantial benefits from the project (Gold Mining Project) will accrue to the immediate project area, the sub-region and the province of the North West. These benefits must be offset against the costs of the project, including the impacts to landowners.

Further to the above, it has been determined that the mining project activities will not have a conflict with the spatial development plans, the integrated Development Plans, the Environmental Management framework, existing industrial and commercial development of the City of Matlosana Local Municipality.

The applicant further commits to ensure their contribution to environmental education and to their employees during the project life. The employees will be made aware of work that may be harmful to their health and the environment and of any work posing danger. This is undertaken in terms of the Mine Health and Safety Act, 1999 (Act 29 of 1996) and their regulations, which gives the employees the right to refuse work that is dangerous. The applicant will respect decisions of employees regarding the above and is committed to the protection of employees against any dangerous working environment.

g) Motivation for the overall preferred site, activities and technology alternative

(i) Site

- **Preferred Site**

  The site was preferred because of Anglo Gold operations, which is about 1.5 km from the proposed area.

- **Site Alternative**

  The entire property and surrounding properties owned by the private farmers were considered as potential Gold Ore mining sites. However, due to the existence of numerous wetland areas in and around the property, the proposed mining locality was decided as the best alternative due to its safe distance from any potential negative impact on the wetland areas of the property.

(ii) Proposed Activity

- **Preferred activity**

  The primary activity for the project is Gold Ore mining, the entire application is based on this activity therefore all the site activities will be related to Gold Ore mining. Site establishment activities will be very limited since no infrastructure will be placed/erected on site. Site activities will include:

  - Establishment of waste rock dump on site within the permitted 5 ha;
  - The construction of Pollution control dam for the purpose of storing polluted water from the Waste Rock Dumping within the permitted mining area;
  - Topsoil stockpiling; and
  - Silica Gold Ore stockpiling.

- **Activity Alternatives**

  No activity alternatives were considered because the entire application is based solely on Gold Ore mining.

(iii) Technology

- **Preferred technology**

  A front end loader will be used for removal of topsoil, extraction and loading of Gold Ore into site haulage truck which will offload at the stockpiling area. Tipper trucks will be used for delivery of Gold Ore off site to customers. The technological methods were proposed due to previous success with other Gold Ore mine operations undertaken by the applicant in the area.

- **Technology alternatives**

  No other mining technology alternatives were considered; this was influenced by the non-complexity of silica Gold Ore mining that only requires simple traditional small-scale mining technology.

(iv) Scheduling/Operational Alternatives

- **Preferred project scheduling**

  The mining activities will be undertaken within a seasonal stream and the preference will be to mine during the dry season when the stream is not flowing. This will reduce the impact on water, downstream ecology and water users, site water management and machinery.

  The Gold Ore mining intensity will be based on the demand for silica Gold Ore in the area, and subject to weather conditions. Mining will take place Monday to Saturday during specified work hours. No mining may take place outside these specified times and after sunset.

- **Scheduling alternative**

  The other scheduling alternative considered is mining throughout the year, however this was found to create water management challenges on site including channelling and diversion.

h) Full description of the process followed to reach the proposed preferred alternatives within the site

i) Details of the development footprint alternatives considered.

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

Since the primary objective of the project is silica Gold Ore mining, the site choice was based on the following:

- Availability of high quality mineable silica Gold Ore;
- Accessibility of the site and Gold Ore reserves;
- Current land use and potential land use conflicts;
- Environmental sensitivity; and
- Gold Ore market

1.1.1.2 The type of activity to be undertaken;

The mining activity was preferred based on consultation with land claimant and the applicant. The activity was influenced by the presence of Gold Ore on site and current illegal mining degrading the site.

1.1.1.3 The design or layout of the activity;

The site layout is chiefly determined by the distribution of silica Gold Ore onsite, therefore the site layout will take a more linear shape than following the watercourse. The layout for the Gold Ore mining activity will be as per the sketch plan (Figure 1-2 above). No site office is required. A portable toilet will be placed away from the riparian area and the 1:100 year floodline, which will be utilised by the mine's employees. The site does not allow for functional layout alternatives due to its small size. No processing will take place on site as it would be an additional environmental impact and is not preferred.

1.1.1.4 The technology to be used in the activity;

The mining methods to be used are conventional and universally proven to be the best and only manner in which to mine Gold Ore under such mining and operational circumstances. The consideration of alternative mining methods was based on the following:

- **Access to Gold Ore reserve:** The Gold Ore is readily available and does not require sophisticated equipment to extract**;**
- **Site rock/overburden strength:** The Gold Ore is overlain by soft material.

1.1.1.5 The operational aspects of the activity

The timing of implementing mining programme will commence as soon as the permit is granted by the DMR, the landowner, interested and affected parties will be notified about the mining programme to ensure a satisfactory working and adhering relationship.

1.1.1.6 The option of not implementing the activity

A “no-go” alternatives ensures that the current site status quo continues as it is and the proposed activity not implemented. The high potential of good quality silica Gold Ore on site has on numerous occasion gave rise to illegal and environmentally irresponsible Gold Ore mining. These activities did not only degrade the environment but also created tensions between farmers and illegal miners. Since the Gold Ore is abundantly deposited within a watercourse the downstream water users are also affected by the illegal Gold Ore mining. An authorised Gold Ore mining will ensure that the Department of Mineral Resources can keep track of site activities and monitor operational conditions and ensures that the site is fully rehabilitated when mining ceases.

ii) DETAILS OF THE PUBLIC PARTICIPATION PROCESS FOLLOWED

This section of the report provides an overview of the tasks undertaken for the Public Participation Process (PPP). All PPP undertaken is in accordance with the requirements of the EIA Regulations (April 2017). It further provides an outline of the next steps in the PPP and makes recommendations for tasks to be undertaken during the environmental assessment phase of the environmental authorisation process.

Land owners where identified through a search conducted via online search engines accessing the Title Deed office database and by visiting affected properties. In addition to land owner's other relevant organisations where identified and notified of the application. This includes municipal and State departments with jurisdiction in the area and Non-Governmental Organisations (NGOs) with an interest.

The PPP tasks conducted for the proposed project include:

- Identification of key Interested and Affected Parties and other stakeholders (organs of state and other parties);
- Consultation and correspondence with I&AP's and Stakeholders and the addressing of their comments; and
- Site notices and Newspaper advert.

Public Participation is the involvement of all parties who are either potentially interested and or affected by the proposed development. The principal objective of public participation is to inform and enrich decision-making.

Interested and Affected parties (I&AP's) representing the following sectors of society has been identified:

- National, provincial and local government;
- Agriculture, including local landowners;
- Community Based Organisations;
- Non-Governmental Organisations;
- Water bodies;
- Tourism;
- Industry and mining;
- Commerce; and
- Other stakeholders.

The interested and affected parties were notified of project as follows:

1. **Newspaper advertisement**

   An advertisement was placed in a local newspaper (Vrystaat Nuus/News) and which was published on 03 October 2018.

2. **Site notice placement**

   In order to inform surrounding communities and adjacent landowners of the proposed development, site notices were erected on site and at visible locations close to the site. The site notices also clearly stipulated what, where and when is proposed. It also stated where and how the BAR and EMP can be accessed.

3. **Background Information Document**

   The Background Information Document (BID) and Draft Basic Assessment Report (BAR) were available for inspection at the Dihlabeng Local Municipality, Community library, and on our company officers via email.

   The Draft BAR and EMPr report was made available at Bethlehem community library and Dihlabeng Local Municipality for review on 03 of September 2018. Electronic copies of the reports were sent to registered IAPs through emails.

4. **Telephonic conversations**

   Where necessary telephonic conversations were held prior to sending out information and for further clarity.

5. **Meetings**

   A public meeting was held at PORTION OF PORTION 200 OF THE FARM NOOITGEDACHT 434 IP farm (10h00 am-13h00 pm) (Wednesday) 29 August 2018 (Q/A session & Handing out flyers).

6. **Release of draft BAR and EMPr for review**

   This report was released to the public for public review and comment on 08 of October 2018. All stakeholders and I&AP's where notified of the report's availability for comment for 30 days through site notices and emails.

   A DETAILED CONSULTATION REPORT IS ATTACHED TO THIS REPORT AS APPENDIX 02.

iii) Summary of issues raised by Interested and Affected Parties

Table 1-4: Consultation Summary

Interested and Affected Parties **List the names of persons consulted in this column, and** **Mark with an X where those who must be consulted were in fact consulted.**		**Date** **Comments** **Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
AFFECTED PARTIES					
Landowner/s	**X**				
Lawful occupier/s of the land					
Landowners or lawful occupiers on adjacent properties	**X**				

Municipal councillor	**X**				
Municipality	**X**				
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e					
ESKOM					
Telkom					
Department of Labour					
Forestry and Fisheries. **Sub-Directorate: Forestry Regulations and Support** **Office of the Regional Land Claims**					

Communities					
Dept. Land Affairs					
Traditional Leaders					
Dept. Environmental Affairs					
Other Competent Authorities affected					
OTHER AFFECTED PARTIES					
INTERESTED PARTIES					
All neighbours were notified of the Application					

iv) The Environmental attributes associated with the alternatives.

(The environmental attributed described must include socio-economic, social, heritage, cultural, geographical, physical and biological aspects)

(1) Baseline Environment

(a) Type of environment affected by the proposed activity

Key aspects of the baseline environment that are likely to impact on the scope of the impact assessment and management measures that are implemented as well as project decisions regarding alternatives are listed below.

- ***Topography***

The topographical setting of the study area is closely related to its geology and structural history. The area south of the project area is mainly underlain by Karoo lava which forms a monotonous and featureless landscape. The project area is located in an area which is relatively flat lying with the incision of the Brak River valley towards the north of the area, at a surface elevation of 1620-1635 mamsl (Gemecs, 2016). The elevation in the area rises gently to 900 mamsl in the south (Golder, 2012). Some distance to the south of the project area, the Soutpansberg forms high mountainous terrain with an elevation of 2000 mamsl and this exceptionally high ground extends for more than 60 km's in an east-westerly trending directionClimate

The prospecting study area is located within the Highveld ecoregion and normally receives about 639mm of rain per year, with most rainfall occurring mainly during mid-summer. The site receives the lowest rainfall (1mm) in June and the highest (122mm) in January. The average midday temperatures for Ladysmith range from 20°C in June to 28.1°C in January. The region is the coldest during July when the temperature drops to 3.1°C on average during the night.

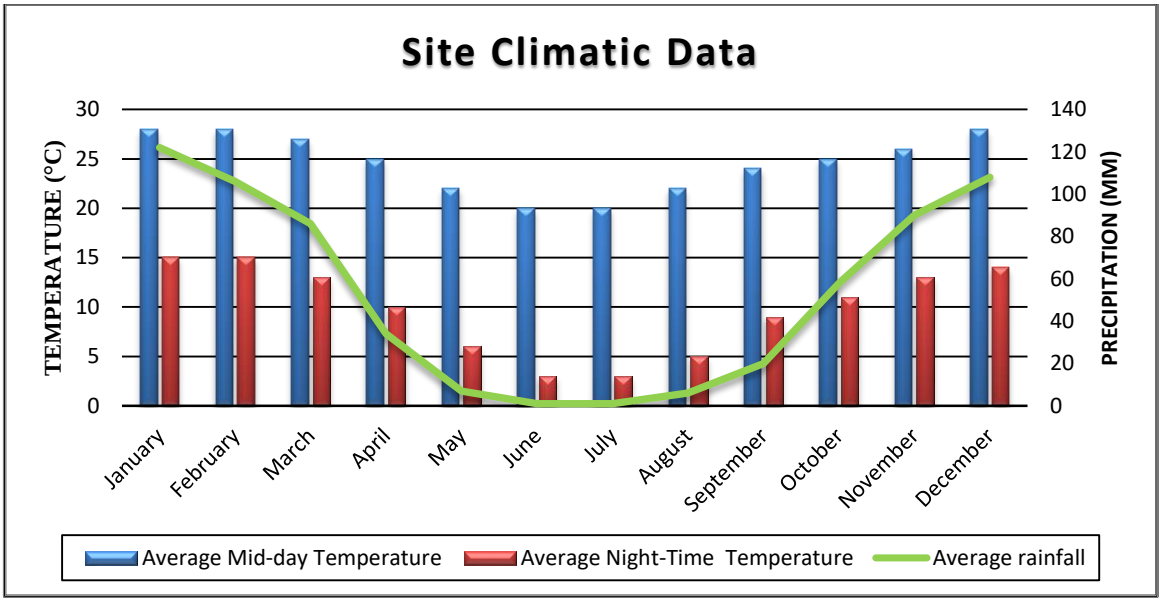

Figure 1-5: Climatic Conditions

✓ ***Geology and Soil***

The study site is located within the Molteno Formation of the Karoo Depositional Basin. The geology is made up of three distinctive lithologies which are the Mudstone, Arenite and Shale. Gold Orestone of the lowermost Molteno Formation was formed by rivers in a wet environment. These are now exposed as small cliffs in the lower Drakensberg and can be easily recognised by their sparkling appearance. This is due to minute quartz crystals that coat and bind together the Gold Ore grains.

Figure 1-6: Site Geological Map

✓ ***Water Management Areas***

The project is located within the Upper Orange Water Management Area (WMA) and in the quaternary catchment D21C. The main rivers system of this WMA are Modder,Riet,Caledon and Orange. The site is located along the Caledon River which is the border river between South Africa and Lesotho.

✓ ***Biodiversity***

The proposed prospecting site is within the Grassland Biome, the second largest of the nine biomes in South Africa, occupying an area of approximately 355 000 km2 or 27.9% of South Africa (Mucina and Rutherford, 2006). Although this biome is found in eight of the nine provinces of South Africa, it occurs mainly on the high central plateau (Highveld and Mpumalanga), the inland areas of the seaboard of KwaZulu Natal, mountainous areas of KwaZulu-Natal and the central parts of the Eastern Cape (Mucina and Rutherford, 2006). Altitude ranges from 300 m above sea level (masl) on

the coastal plateau to 2 850 masl in the Drakensberg (Rutherford and Westfall, 1994). The local grassland within the proposed site is the Gm 4 Eastern North West Gold Orey Grassland (Figure 1-7).

Figure 1-7: Site Vegetation

Mesic Highveld Grassland Bioregion: Are located in the eastern, higher rainfall parts of the Highveld, covering much of Gauteng, the Eastern North West, much of Mpumalanga and extending slightly into neighbouring parts of the Eastern Cape, and Lesotho. This Grassland is made up of highly productive sourveld grasslands characterised by long-lived grasses that favour re-sprouting, and other plants that show a tendency to store carbohydrates in specialised underground storage organs; plants withstand above-ground disturbance by being long-lived with only occasional replacement from seed.

Mesic Highveld Grassland Bioregion are adapted to a climate characterised by high summer rainfall (700 – 1 200 mm mean annual precipitation), combined with warm summer temperatures and cool to cold winters with a moderate to high incidence of frost. Occur at mid-altitudes (1 300 – 1 800 m) in varied landscapes that include extensive flat or undulating plains broken by low hills and ‘tafelbergs, rocky outcrops, steep boulder-strewn slopes and deep river valleys. A high proportion of vegetation types in Mesic Highveld Grassland are considered to be threatened and this ecosystem group is generally poorly protected (Figure 1-8)

Figure 1-8: Site sensitivity

- ✓ ***Heritage Resources***

A Heritage Impact Assessment was not undertaken as part of the development of the impact assessment. Based on available Geographic Information System data, graves and any historical and cultural feature are not present within the prospecting area.

- ✓ ***Social Characteristics of the Study Area and Surrounds***

The Dihlabeng Local Municipality comprise of a large rural component together with the presence of five urban concentrations, which is briefly explained as follows: Bethlehem/Bohlokong, Clarens/Kgubetswana, Fouriesburg/Mashaeng, Paul Roux /Fateng tse Ntsho and Rosendal/Mautse. There is a need for job creation initiatives for Dihlabeng community. The Dihlabeng Local Municipality had a total population of 129

338 with approximately 33 116 households according to Stats SA Census 2001. Then in 2011 the population of DLM was 128 704 with 38 593 households

Dihlabeng Local Municipality had an average household size of 3, 3 persons per household. The local population has a youthful age structure and this young population will grow rapidly in future, which implies high growth rate in the labour force. At present the local economy is unable to provide sufficient employment opportunities to meet the needs of the economically active populations. A youthful populations structure also implies a relatively higher dependency ratio. IDP (2016/17) currently estimates that only 46% of the population is currently economically active. This figure can be attributed to the high percentage of the population being under the age of 15, which makes the economically inactive.

The majority of the population lives in the rural areas. The rural areas are the most underdeveloped. The largest percentage of the rural population between the ages of 15 – 65 years comprises women. This can be attributed to the migration of mean for employment opportunities elsewhere.

The Key developmental challenges faced by Dihlabeng Local Municipality are that of lack of employment opportunities, because of a population growth rate that exceeds the economic growth rate. The prevalence of illegal immigration; and the lack of economic activities and investment opportunities in the area to aid the issue of employment creation.

- ✓ **Age Structure and Sex**

Dihlabeng municipality has mixed racial groups with majority being Black African followed by the white population group and Indian or Asian being the minority. The population has a youthful age structure and the immediate significance of this young age structure is that the population will grow rapidly in future and this implies a future high growth rate in the labour force. At present, the local economy is unable to provide sufficient employment opportunities to meet the needs of the economically active population. A youthful population structure also implies a relatively higher dependency ratio.

There is high percentage of the population that is economically inactive which can be attributed to the high percentage of the population being under the age of 15, which per definition renders them economically inactive. The largest percentage of the rural black population between the ages of 15 – 65 years comprises women. This can be attributed to the migration of men for employment opportunities elsewhere. The high

level of male absenteeism implies that women are predominantly the key decision makers at home.

- ✓ **Employment Status**

In the analysis of the labour and employment situation in a region, it is necessary to focus attention on the size and spatial distribution of the labour force. Secondly, the characteristics of the labour market should be analysed. To this end, it is necessary to examine the supply of labour, which is derived from figures on the economically active population in a region. The productivity of a location is also directly related to the number of individuals who are active in the workforce. High levels of economic activity are directly related both to the productivity and competitiveness of an area. Where economic inactivity is high, this indicates a loss of productive resource available to the local business base, therefore impacting negatively on overall economic performance.

According to the IHS Global Insight database, in 2011, the Municipality had an economically active population of 118,469 which represent about 21.60% of the entire population. In recent years, in common with the provincial and district economies, the Municipality has experienced an increase in overall employment levels. The total number of employed people is 89,881 and the total number of unemployed persons is 30,691 (25.9%). The unemployment rate in Makhado has decreased by 10.2% in recent years (from 36.1% in 2001 to 25.90% in 2011). The unemployment rate for Limpopo as a whole has also decreased by 9.30% in the same period (from 29.90% to 20.60%).

(b) Description of the current land uses.

The current land use on the proposed site is characterised by both subsistence and commercial farming practicing both livestock and agricultural farming.

(c) Description of specific environmental features and infrastructure on the site.

- ✓ There are no infrastructures within the proposed site.

(d) Environmental and current land use map

v) Impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts can be reversed.

Here a list of possible impacts will be provided, a full impact analysis which includes the significance of the impacts, their nature, extent, duration and probability of the impacts, the degree impacts reversibility and irreplaceable loss of resources has been provided in section 1.(j) of Part A on page 35 below as per the assessment criteria provided in section 1)a)vi) of Part A.

Table 1-5: Probable Impacts

Potential Impacts	**Reversible**	**Nature**
Land use conflicts	Yes	Negative
Legal Contraventions – Operating outside permitted scope,	Yes	Negative
Soil compaction, erosion and pollution	Yes	Negative
Water pollution	Yes	Negative
Loss of Flora and Fauna	Yes	Negative
Dust generation from Gold Ore transportation	Yes	Negative
Noise pollution emanating from heavy vehicles and operating machinery	Yes	Negative
Visual impacts	Yes	Negative
Job creation	_	Positive

vi) Methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks.

The potential environmental impacts associated with the project will be evaluated according to its nature, extent, duration, intensity, probability and significance of the impacts, whereby:

Nature: A brief written statement of the environmental aspect being impacted upon by a particular action or activity.

Extent: The area over which the impact will be expressed. Typically, the severity and significance of an impact have different scales and as such bracketing ranges are often required. This is often useful during the detailed assessment phase of a project in terms of further defining the determined significance or intensity of an impact. For example, high at a local scale, but low at a regional scale;

Duration: Indicates what the lifetime of the impact will be;

Intensity: Describes whether an impact is destructive or benign;

Probability: Describes the likelihood of an impact actually occurring;

Impact Reversal: The probability and the degree of reversing the activity impact**;**

Irreplaceable Loss: Loss of resources that cannot be replaced; and

Cumulative: In relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

Table 1-6: Criteria Used for Rating of Impacts

CRITERIA	DESCRIPTION			
Extent	National (4) The whole of South Africa	Regional (3) Provincial and parts of neighbouring provinces	Local (2) Within a radius of 2 km of the construction site	Site (1) Within the construction site
Duration	Permanent (4) Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient	Long-term (3) The impact will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter. The only class of impact which will be non-transitory	Medium-term (2) The impact will last for the period of the construction phase, where after it will be entirely negated	Short-term (1) The impact will either disappear with mitigation or will be mitigated through natural process in a span shorter than the construction phase
Intensity	Very High (4) Natural, cultural and social functions and processes are altered to extent that they	High (3) Natural, cultural and social functions and processes are altered to extent that they temporarily cease	Moderate (2) Affected environment is altered, but natural, cultural and social functions and processes	Low (1) Impact affects the environment in such a way that natural, cultural and social functions

	permanently cease		continue albeit in a modified way	and processes are not affected
Probability Of Occurrence	Definite (4) Impact will certainly occur	Highly Probable (3) Most likely that the impact will occur	Possible (2) The impact may occur	Improbable (1) Likelihood of the impact materialising is very low
Impact Reversal	Highly Impossible (4) Impact reversal will certainly be impossible	Moderate (3) Impact can be reversed to some extent with loss of natural resources	Possible (2) High possibility of impact reversal	Definite (1) Impact can be totally reversed
Loss of irreplaceable resources	Definite (4) Resources definitely be lost	Highly Probable (3) Most likely that resources will be lost	Possible (2) Resources may be lost	Improbable (1) Loss of resources is highly unlikely

Significance is determined through a synthesis of impact characteristics. Significance is also an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact.

Table 1-7: Criteria for Rating of Classified Impacts

Negligible (5 -10 points)	A negligible impact that can be easily managed and avoided.
Low impact/ Minor (11 -20 points)	A low impact has no permanent impact of significance. Mitigation measures are feasible and are readily instituted as part of a standing design, construction or operating procedure.
Medium impact/ Moderate (21 - 30 points)	Mitigation is possible with additional design and construction inputs.
High impact (31 – 50 Points)	The design of the site may be affected. Mitigation and possible remediation are needed during the construction and/or operational phases. The effects of the impact may affect the broader environment.
Very high impact/ Major (51 - 80 points)	Permanent and important impacts. The design of the site may be affected. Intensive remediation is needed during construction and/or operational phases. Any activity which results in a "very high impact" is likely to be a fatal flaw.
Status	Denotes the perceived effect of the impact on the affected area.
Positive (+)	Beneficial impact.
Negative (-)	Deleterious or adverse impact.
Neutral (/)	Impact is neither beneficial nor adverse.

The suitability and feasibility of all proposed mitigation measures is included in the assessment of significant impacts. This was achieved through the comparison of the significance of the impact before and after the proposed mitigation measure is implemented.

vii) The positive and negative impacts that the proposed activity (in terms of the initial site layout) and alternatives will have on the environment and the community that may be affected

(a) Positive Impacts

Improved site environmental management – Illegal Gold Ore mining has been actively taking place on site with no rehabilitation plan/ measures in place. A legalised operation will ensure that sound and practical measures are implemented to restore the integrity of the watercourse system once the mining operation ceases;

Creation of jobs – The mine although at a small scale will create jobs for machinery and trucks' operators and qualified environmental professional to facilitate site environmental management;

Economic boost to Dihlabeng Local Municipality – The mine, together with other SMMEs within the municipalities will collectively contributes to MLM's realisation of its IDP objectives of growing and supporting SMMEs.

(b) Negative Impacts

Loss of Biodiversity – Removal of vegetation for creation of internal access roads, establishment of stockpiling areas, pollution control dam and waste rock dumping area will also indirectly affect the local faunas as habitat will be destroyed and usual pathways obstructed;

Alteration of Riparian Ecology – The mining activities will take place within the riparian ecosystem thus altering the functioning of the ecosystem. The removal of vegetation, soil disturbances and river bed extraction will all result in disturbed ecological functioning of the local riparian ecology;

Water contamination – The mining activities will be undertaken directly within the water course, should the stream be flowing, water quality will be affected as the water will appear muddy and content of suspend load increased, however there are no hazardous substances expected to contaminate the water. The front end loader will be properly serviced and a daily check will be performed to ensure there are no hydrocarbons spillages and leakages;

Soil Erosion and river bank fall-in – Continuous mining of the river bed will result in reduced bank stability promoting erosion. The riparian vegetation should therefore not be disturbed to as to maintain the stability of the river banks.

Noise pollution – The increased vehicle movement within the proposed site will potential increase the local ambient noise affecting both the wildlife and local property dwellers;

Land Pollution – Human activities are associated with generation of wastes, with poor waste management the problem can exceed the project footprint and affect other local land user/owners.

Air pollution – Repeated driving on gravel roads will potential generate dust, and should the transported Gold Ore be dry the potential for dust generation increases;

Acid Mine Generation – The Gold Ore mining will potentially create ponding within the stream as a result water flow will slow down and stagnant pools establishes. The stagnant pools in the presence of minerals such as Iron and Sulphides have the potential to generate acidic water;

Introduction of invasive alien plants – Invasive alien plants are opportunistic plants that takes advantage of disturbed ecologies, the riparian ecology disturbance will potentially create the gap for invasion by alien plants;

Influx of job seekers to site – The mine is expected to attract local job seekers and as a consequence create social and security threat to land owners and their properties.

viii) The possible mitigation measures that could be applied and the level of risk

The mitigation measures for each identified impact/risk has been provided in subsection j) below on page 35.

ix) Motivation where no alternative sites were considered

Alternative sites were considered within the application properties and the surrounding and preference was made for the site under this application due to the following reasons:

- ✓ Large deposits of silica Gold Ore presence within the proposed site confirmed through inspection of existing illegal Gold Ore mining pits;
- ✓ Ease of access to the preferred site without the requirement to create access roads; and
- ✓ The presence of numerous wetlands within the alternative sites.

i) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site

In order to identify the potential impacts associated with the proposed prospecting activities the following steps were undertaken:

- ✓ The stakeholder consultation process was undertaken in an interactive manner, providing landowners and identified stakeholders with the opportunity to provide input into the project. This was a key focus, as the local residence has capabilities of providing site specific information, which may not be available in desktop research material. Stakeholders are requested to provide their views on the project and any potential concerns which they may have. All comments and concerns are captured and incorporated into the impact assessment.
- ✓ A detailed desktop investigation was undertaken to determine the environmental setting in which the project is located. Based on the desktop investigations various resources were used to determine the significance and sensitivity of various environmental factors. The desktop investigation involved the use of:
    - Department of Water Affairs and Sanitation's information documents such as the ground water vulnerability report;
    - Municipal Integrated Development Plan;
    - Municipal Strategic Development Framework;
    - South African National Biodiversity Institute GIS Map;
    - The geological map of South Africa;
    - South African National Biodiversity Institute (SANBI) Biodiversity Geographic Database LUDS system;
    - Geographic Information System base maps;
- ✓ A site visit will be conducted to ensure that the information gathered as part of the Desktop investigation reflects the current status of the on-site.
- ✓ The ratings of the identified impacts were undertaken in a quantitative manner as provided in Impact Assessment Section. The ratings were undertaken in a manner to calculate the significance of each of the impacts. The EAP also assesses the outcomes of the calculation to determine whether the outcome reflects the perceived and the actual views.
- ✓ The identification of management (mitigation) measures were done based on the significance of the impacts and measures that were considered appropriate and successful, were adopted as Best Practical and Economical Options.

j) Assessment of each identified potentially significant impact and risk

(This section of the report must consider all the known typical impacts of each of the activities (including those that could or should have been identified by knowledgeable persons) and not only those that were raised by registered interested and affected parties)

Table 1-8: Impact Assessment

E = Extent, D = Duration, I = Intensity, R = Impact Reversibility, L = Irreplaceable Loss of Resources, P = Probability of occurrence									Where (E + D + I + R + L) X P = Significance		
Potential Impact	Phase	Impact Description	Rating Before Mitigation						Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			E	D	I	R	L	P			
LEGAL REQUIREMENTS											
Delayed and/or disrupted mining operations	Site Establishment & Operational	✓ Disregarding Environmental Authorisation conditions; ✓ Disregarding access agreement conditions; Disregarding mining legislative requirements; ✓ Disregarding or partially complying to the conditions of water use license; ✓ Partial compliance to EMPr.	2	3	4	4	4	4	-68	✓ A copy of each operational license/permit must be kept on site; all site personnel must be inducted on all legislative requirement pertaining to site mining activities; ✓ In cases where amendments are required the existing conditions are binding until legally amended.	-10

E = Extent, D = Duration, I = Intensity, R = Impact Reversibility, L = Irreplaceable Loss of Resources, P = Probability of occurrence	Where (E + D + I + R + L) X P = Significance

Potential Impact	Phase	Impact Description	Rating Before Mitigation						Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			E	D	I	R	L	P			
Legal liabilities	Site Establishment & Operational	✓ Property owners suing for damages and /or unapproved access into their properties; ✓ Legal penalties for failing to comply with site operational licenses/authorisations/permit.	1	3	4	4	4	4	-64	✓ All permits/authorisations/licenses must be fully reviewed before work can be undertaken to ensure that required resources are made available; ✓ A complaint register must be established to record all complaints from land owners and other affected parties also reflected measures taken to address the complaints and dates.	-18
SOIL											
Soil pollution	Site Establishment & Operational	✓ Leakages of hydrocarbons from FEL & Haulage Trucks;	1	2	1	1	1	2	-12	✓ All site vehicles and equipment's must be properly maintained regularly and daily inspection sheet be kept with each truck; ✓ A drip tray must be placed under stationery machineries; ✓ Leakages and Spillages must be attended to as soon as they are noticed and the contaminated soil must be placed in designated plastic bags/bins to be cleaned or disposed of at registered appropriate waste site.	-6

E = Extent, D = Duration, I = Intensity, R = Impact Reversibility, L = Irreplaceable Loss of Resources, P = Probability of occurrence	Where (E + D + I + R + L) X P = Significance

Potential Impact	Phase	Impact Description	Rating Before Mitigation						Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			E	D	I	R	L	P			
Soil Compaction	Site Establishment & Operational	Compaction of soil by site moving vehicles reducing plants growing capabilities;	1	2	1	1	1	4	-24	✓ Vehicle and machinery movements must be restricted to approved corridors; ✓ No new access roads must be developed without the approval of site ECO; ✓ The property owners must be notified of newly established access roads.	-10
Loss and degradation of topsoil	Site Establishment & Operational	✓ Removal of "dirty" topsoil to expose high quality silica Gold Ore; Loss of topsoil through erosion and contamination resulting in reduced vegetation rehabilitation potential.	1	2	2	2	2	4	-36	✓ Topsoil must be stockpiled separately from any other site materials; ✓ The topsoil must be stockpiled away from the drainage lines and outside the 1:100 year floodline but within the approved mining area; ✓ Contaminated topsoil must be treated as soon as possible and where treatment is not possible, the soil must be separated and stored in contaminated materials bin; ✓ Storm water diversion channels must be developed around topsoil stockpiles;	-14

E = Extent, D = Duration, I = Intensity, R = Impact Reversibility, L = Irreplaceable Loss of Resources, P = Probability of occurrence	Where (E + D + I + R + L) X P = Significance

Potential Impact	Phase	Impact Description	Rating Before Mitigation						Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			E	D	I	R	L	P			
										✓ Topsoil must not be used for any other activity besides rehabilitation unless there is excess.	
Soil Erosion	Site Establishment & Operational	Erosion of loose soils and stockpiled soils	1	3	1	1	1	3	-21	✓ Storm water diversion channels must be developed around stockpiling area; ✓ Soil disturbance must be limited to working area.	12
BIODIVERSITY											
Loss of vegetation	Site Establishment & Operational	✓ Clearing of vegetation to access Gold Ore; ✓ Clearing of vegetation to create access roads; ✓ Clearing of Vegetation to establish stockpiling area; ✓ Possible fire breaks from operations.	1	3	2	3	4	4	-52	✓ Although no protected or endangered plant species were identified during the EIA Site Assessment process, the absence of such must be confirmed before clearing takes place; ✓ Vegetation clearing must be limited to working area; The mining area must not be cleared all at once but progressively with mining activity; ✓ Seedbank for indigenous vegetation may be established to aid during site rehabilitation; ✓ Cleared vegetation must not be piled within the river course; No fires must be allowed on site.	-16

E = Extent, D = Duration, I = Intensity, R = Impact Reversibility, L = Irreplaceable Loss of Resources, P = Probability of occurrence	Where (E + D + I + R + L) X P = Significance

Potential Impact	Phase	Impact Description	Rating Before Mitigation						Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			E	D	I	R	L	P			
Loss of fauna	Site Establishment & Operational	✓ Loss of habitat when vegetation is cleared and wild environment invaded by mining activities; ✓ Restricted fauna movement and increased health and safety risks to wildlife due to deep excavations and barricades; ✓ Driving over micro and small wild animals; Wild life hunting by the mine employees.	2	3	2	3	4	4	-56	✓ No hunting must be allowed on site; ✓ The site must be kept neat at all times to avoid attraction of scavengers; ✓ Where animals are spotted within working areas they must be rescued and moved to adjacent undisturbed areas; ✓ Excavations must be barricaded to prevent animal fall-in; ✓ All excavations must be re-filled once the mining at that specific area ceases; ✓ No pets must be brought to site; Site activities must be restricted to day time.	-16
Invasion by invasive alien plants	Site Establishment, Operational & Post Closure	Introduction of invasive alien plants	2	4	4	3	3	4	-64	✓ A poster of all common invasive plants for the area must be developed and employees be inducted on the subject; ✓ All invasive plants must be removed as soon as they are noticed;	-22

E = Extent, D = Duration, I = Intensity, R = Impact Reversibility, L = Irreplaceable Loss of Resources, P = Probability of occurrence	Where (E + D + I + R + L) X P = Significance

Potential Impact	Phase	Impact Description	Rating Before Mitigation						Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			E	D	I	R	L	P			
										✓ An invasive plants monitoring programme must be developed for both operational and post operational phases.	
HYDROLOGY											
Contamination of surface water	Site Establishment, Operational & Post Closure	Pollution Control Dam (PCD) collapse and overflow	2	3	3	2	2	4	-48	✓ The PCD walls and floors must be designed by a qualified engineer as per Waste Dam Regulations; ✓ Should water contamination occur the downstream water users must be notified with immediate effect; ✓ The PCD must be located outside the 1:100 year floodline; ✓ No littering must be allowed on-site the riverbed must be kept free of foreign (waste) materials; ✓ No equipment and vehicle must be serviced on-site; ✓ All site machinery must be maintained & kept in good conditions; ✓ No stationery trucks and/or equipment must be parked within the river course;	-22

E = Extent, D = Duration, I = Intensity, R = Impact Reversibility, L = Irreplaceable Loss of Resources, P = Probability of occurrence	Where (E + D + I + R + L) X P = Significance

Potential Impact	Phase	Impact Description	Rating Before Mitigation						Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			E	D	I	R	L	P			
										✓ The river bed must be rehabilitated to allow free flow of water thus preventing acid generation.	
Riverbed alteration	Operational & Post-Mining	Gold Ore mining within the river course resulting in excavations	1	4	4	3	4	4	-64	It will be impossible to restore the riverbed to its pre-mining state however measures should be implement to enhance riverbed rehabilitation: ✓ All rubbles and "dirty" overburden must be stockpiled and used as backfill materials when Gold Ore mining ceases; ✓ The backfill material must be flattened to avoid uneven surfaces that could enhance water flow speed and erosion.	-24
Impeded stream flow	Operational & Post-Mining	During flow season the mining activities will disrupt the flow through diversion or flow reduction through deep excavations.	2	3	2	2	2	4	-44	✓ The excavation within the river course must be backfilled; ✓ Mining activities should be mainly conducted during dry seasons; ✓ Other water users must be notified of impacts on river water.	-24

E = Extent, D = Duration, I = Intensity, R = Impact Reversibility, L = Irreplaceable Loss of Resources, P = Probability of occurrence	Where (E + D + I + R + L) X P = Significance

Potential Impact	Phase	Impact Description	Rating Before Mitigation						Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			E	D	I	R	L	P			
Acid mine water generation	Operational & Post-Mining	Water ponding as a results of disturbed riverbed thus increasing the potential for acid generation	1	4	2	2	3	3	-36	✓ Mining activities should be prioritised during dry season; ✓ Riverbed must be levelled to minimise ponding and prevent acid generation.	-12
ENVIRO-SOCIOECONOMIC											
Job creation	Site Establishment & Operational	The machinery and vehicle operate will be required.	2	3	1	0	0	4	24	The employees should be sourced from the local human resource pool	24
land owner conflicts	Site Establishment & Operational	Property owner reluctance to grant access into their properties	1	3	2	1	1	4	-32	✓ Land access agreement must be reached between the applicant and the property owners; ✓ Operational times must be communicated with the property owners; ✓ All mining activities must be limited to approved areas; No hunting must be allowed on site; ✓ No camping areas must be established on site; ✓ Access roads establishment must be done in consultation with property owners.	-5

E = Extent, D = Duration, I = Intensity, R = Impact Reversibility, L = Irreplaceable Loss of Resources, P = Probability of occurrence	Where (E + D + I + R + L) X P = Significance

Potential Impact	Phase	Impact Description	Rating Before Mitigation						Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			E	D	I	R	L	P			
Visual alterations	Site Establishment, Operational, Post Closure	✓ Alteration of the natural environment outlook as the riparian vegetation is cleared; ✓ The presence of heavy vehicles on site for 5 days a week.	1	3	2	1	1	4	-32	✓ All site activities must be limited to approved permit area; ✓ The property owners must be made aware of mine scheduling; ✓ All mining personnel must be fully aware of property owners' access conditions.	-18
Noise Pollution	Site Establishment & Operational	Introduction of noisy heavy machinery and vehicles in a quiet wild environment.	1	3	2	1	1	2	-16	✓ The property owners and other affected parties must be made aware of mine scheduling; ✓ The activities must be conducted during the day i.e. from 07:00 to 18:00.	-12
Land Pollution	Site Establishment & Operational	General waste littering by mining personnel	1	3	3	2	1	3	-30	✓ All mining personnel will be inducted on reduce, reuse and recycle concept; ✓ Waste must be separated and stored in marked bins; Waste disposal certificates must be kept on-site; ✓ A clean-up campaign must be undertaken every second Friday;	-7

E = Extent, D = Duration, I = Intensity, R = Impact Reversibility, L = Irreplaceable Loss of Resources, P = Probability of occurrence	Where (E + D + I + R + L) X P = Significance

Potential Impact	Phase	Impact Description	Rating Before Mitigation						Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			E	D	I	R	L	P			
Compromised safety and security	Site Establishment & Operational	The mining activities will result in influx of people to site creating security risks for workers and property owners'.	1	3	2	4	4	4	-56	✓ Land owners must be provided with mine schedule; No hiring must be done on site; ✓ All site personnel must have identification card; ✓ All activities must remain within the approved site.	-24
HEALTH AND SAFETY											
Bodily injuries	Site Establishment & Operational	Injuries arising from erratic operations or mechanical failures of site machinery and vehicles; Fall into deep excavations either by mine personnel or general public	1	3	2	3	3	4	-48	✓ The site machinery must be kept in good working conditions; Al machinery operators must have permit/license to operate; ✓ Excavations must be demarcated and marked with visible tape; ✓ First aid kits must be made available on site and a trained Safety, Health and Environment Representatives be assigned for each team.	-18

k) Summary of specialist reports

Table 1-9: Summary of specialists reports

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT *(Mark with an X where applicable)*	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
Geo-Hydrological Study	• The disturbance of streams and surface drainage patterns and reduction in flow to downstream must be mitigated through: • Prevention of pollution of surface water resources and impacts on other surface water users	X	Part A Section 1(j); & 1(m); Part B Section 1)a)iv)
Wetland/ Riparian Studies	• Absence of protected/ threatened species must be verified with a site walk before vegetation clearing takes place; • The site must be fully rehabilitated and plants regrowth be monitored.	X	Part A Section 1(j); & 1(m); Part B Section 1)a)iv)
1:100 Year floodline delineation	• The PCD and waste rock dumps must be located outside the 1:100-year floodline	X	Part A Section 1(j); & 1(m); Part B Section 1)a)iv)

L) Environmental impact statement

The main environmental impacts, which are likely to result from the proposed mining activity, have been assessed. Such impacts include soil, water, visual, noise, traffic, social and biophysical impacts which have previously been mentioned throughout the course of the chapter. Through the implementation of suitable mitigation measures associated with each of the possible impacts, the effect thereof can to a large extent be mitigated to **Acceptable/Low levels**.

ii) Summary of the key findings of the environmental impact assessment;

- According to the North West Province's Critical Biodiversity Areas the site is located outside critical biodiversity areas, thus however, does not imply that NMX Construction cc should not exercise proper biodiversity management as recommended by this report and the wetland/riparian study.
- The mining activities will mainly be conducted within the watercourse (i.e. the riverbed) where there are very few growing plants as the plants mainly grow along the river corridors (riparian area) and as such the impact on biodiversity is considered to be of LOW significance.
- The seasonal stream is dry most period of the year including in summer, the stream flows periodically after heavy rains, therefore limited and manageable water impacts are probable;
- The impact of the proposed activity on water sources is considered very **LOW** during the dry season, but the significance changes to **MEDIUM** in rainy season and with implementation of management strategies can be minimised to **LOW** significance;
- There is a need for proper waste management for mud and other wastes generated during mining activities and such wastes must not flow into the natural streams;
- The overall environmental impact of the proposed mining activities can be reduced from **MEDIUM** significance to **LOW** with implementation of sounds water and biodiversity management techniques as provided for by this report and specialist studies; and
- Cumulative noise and visual impacts are rated with a **NEGLIGIBLE** significance;

iii) Final Site Map

iv) Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;

(a) Positive Impacts

Improved site environmental management – Illegal Gold Ore mining has been actively taking place on site with no rehabilitation plan/ measures in place. A legalised operation will ensure that sound and practical measures are implemented to restore the integrity of the watercourse system once the mining operation ceases;

Creation of jobs – The mine although at a small scale will create jobs for machinery and trucks' operators and qualified environmental professional to facilitate site environmental management;

Economic boost to Dr. Kenneth Kaunda District Municipality (MLM) – The mine, together with other SMMEs within the municipalities will collectively contributes to MLM's realisation of its IDP objectives of growing and supporting SMMEs.

(b) Negative Impacts

Loss of Biodiversity – Vegetation will be removed to establish stockpiling areas; these areas will be of a very limited extent;

Water contamination – The mining activities will be undertaken directly within the water course, should the stream be flowing, water quality will be affected as the water will appear muddy and content of suspend load increased, however there are no hazardous substances expected to contaminate the water. The front end loader will be properly serviced and a daily check will be performed to ensure there are no hydrocarbons spillages and leakages;

Soil Erosion and river bank fall-in – Continuous mining of the river bed will result in reduced bank stability promoting erosion. The riparian vegetation should therefore not be disturbed to as to maintain the stability of the river banks.

Noise pollution – The increased vehicle movement within the proposed site will potential disturb the local wild animals.

Influx of job seekers to site – The mine is expected to attract local job seekers and as a consequence create social and security threat to land owners and their properties.

m) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr;

Impact management objectives are described in terms of the Mitigation Hierarchy of the ERM Impact Assessment Standard. The mitigation hierarchy is as follows:

- **Avoid/Reduce Source:** avoiding or reducing at source through the design of the Project (e.g. avoiding by siting or re-routing activity away from sensitive areas or reducing by restricting the working area or changing the time of the activity).
- **Abate on Site:** add something to the design to abate the impact (e.g., pollution control equipment, perimeter screening and landscaping).
- **Abate at Receptor:** if an impact cannot be abated on-site then control measures can be implemented off-site (e.g., noise barriers to reduce noise impact at a nearby residence or fencing to prevent animals straying onto the site).
- **Repair or Remedy:** some impacts involve unavoidable damage to a resource (e.g. forestry due to creating access or materials storage areas) and these impacts can be addressed through repair, restoration or reinstatement measures.
- **Compensate in Kind; Compensate Through Other Means:** where other mitigation approaches are not possible or fully effective, then compensation for loss, damage and disturbance might be appropriate (e.g., planting to replace damaged vegetation, financial compensation for damaged crops or providing community facilities for loss of fisheries access, recreation and amenity space).

Impact management objectives:

- Provide sufficient information to strategically plan the mining activities as to avoid unnecessary social and environmental impacts;
- Provide sufficient information and guidance to plan the prospecting activities in a manner that would reduce impacts (both social and Environmental) as far as practicable;
- Ensure an approach that will provide the necessary confidence in terms of environmental compliance;
- Provide a management plan that is effective and practical for implementation

The impact management outcome for the proposed mining activities will include:

- Ensuring that relevant permits and licenses (Mining Permit, Tree Cutting Permit, Water Use License, Property Access Agreements, etc.) are available on site and site personnel are aware of their operational conditions;
- Ensuring that land owners conditions as per access agreement signed are adhered to and where complaints are received they are attended to as soon as they are received and the grieving party are informed of measures taken to address their concerns**;**
- Ensuring that the mining activities are strictly undertaken within the approved areas, and no other unauthorised activities are undertaken on site;
- Access should only be through approved routes and new routes should only be established with consultation of the site environmental officer and the land owners;
- The mining area is rehabilitated to resemble the pre-mining conditions as far as practicable;
- All foreign objects and materials are removed from site;

n) Aspects for inclusion as conditions of Authorisation

(Any aspect which must be made conditions of the Environmental Authorisation)

- The mine owner must appoint a suitable qualified Environmentalist/consultant who will be responsible for ensuring compliance with the requirements of the Environmental Authorisation and Environmental Management Programme during mining and decommissioning phase;
- A water use license must be successfully applied for before any mining activities can commence on site;
- A monitoring programme must be established to determine the impacts of the mine on water quality; and
- Post closure environmental monitoring programme must be implemented to monitor the success and improve the site rehabilitation for a period of 3 years.

o) Description of any assumptions, uncertainties and gaps in knowledge

- ❖ It must be noted the absence of species during site assessment does not conclude that the species is not present at the site;
- ❖ The floodline was determined using the Digital Elevation Model and not site measurements; and
- ❖ The specialist identified that rainfall had been below average when undertaking assessment due to the present drought impacting on the country.

p) Reasoned opinion as to whether the proposed activity should or should not be authorised

i) Reasons why the activity should be authorized or not

It is the opinion of the EAP that the activity be authorised based on the following:

- ❖ There have been illegal Gold Ore mining activities taking place on site, the locals have established the presence of high quality silica Gold Ore and operating outside the legal framework and consequently the riverine system is left degraded with no rehabilitation and monitoring plans in place. An authorised mining activity will ensure that sound environmental management objectives are established and management measures implemented;

- ❖ Although the mining will take place within a watercourse, the stream is dry for most times of the year, thus water impacts will be limited; and management measures can be implemented for flowing periods;

- ❖ There are no other land uses within the proposed site that would create conflict of interests;

- ❖ The site is not located on sensitive ecological areas, and seed banks will be created for rehabilitation purposes to ensure that species diversity is maintained in all disturbed areas;

- ❖ Gold Ore mining is a non-complex activity and is not expected to introduce foreign materials to site, with hydrocarbons being the only chemical that would be brought to site; and

- ❖ The potential for acid mine generation is very low based on the nature of the commodity, and monitoring plan will be implemented for control of post closure acid generation potential.

ii) Conditions that must be included in the authorisation

- ❖ The mine owner must appoint a suitable qualified Environmentalist/consultant who will be responsible for ensuring compliance with the requirements of the Environmental Authorisation and Environmental Management Programme during mining and decommissioning phase;
- ❖ All the mining activities must be strictly limited to the approved 4.89 ha;
- ❖ Chemical toilets must be provided for site personnel and be emptied twice a week by an approved company. The toilets must be placed outside the 1:100 floodline;
- ❖ A water use license must be successfully applied for before any mining activities can commence on site;
- ❖ A monitoring programme must be established to determine the impacts of the mine on water quality;
- ❖ Post closure environmental monitoring programme must be implemented to monitor the success and improve the site rehabilitation for a period of 3 years; and
- ❖ All wastes generated must be disposed of at an appropriate registered landfill and disposal certificate be kept on site.

q) Period for which the Environmental Authorisation is required

The Environmental Authorisation is required for the duration of the mining permit which is two years from the date on which mining commences and thereafter will become renewable for three further consecutives one year periods, which totals a maximum five-year operational period.

r) Undertaking

An undertaken by the EAP and the client is provided for in Section 2 of the EMPr.

s) Financial Provision

The site rehabilitation processes will require two hundred and sixty thouGold Ore three hundred and thirty-two Rand (**R 260 332.00)**

(i) Explain how the aforesaid amount was derived.

The aforesaid amount was derived using the department of mineral resource guideline document for the evaluation of the quantum of closure-related financial provision provided by a mine.

CALCULATION OF THE QUANTUM

Risk Class
Area Sensitivity

No.	Description	Unit	A Quantity	B Master rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (rands)
1	Dismantling of **processing plant and related structures** (including overland conveyors and powerlines)	m3	0,00	9,67	1,00	1,10	0
2(A)	Demolition of **steel buildings and structures**	m2	0,00	134,76	1,00	1,10	0
2(B)	Demolition of **reinforced concrete buildings and structures**	m2	0,00	198,59	1,00	1,10	0
3	Rehabilitation of **access roads**	m2	160,00	32,86	1,00	1,10	5 783
4(A)	Demolition and rehabilitation of **electrified railway lines**	m	0,00	0,00	0,00	0,00	0
4(B)	Demolition and rehabilitation of **non-electrified railway lines**	m	0,00	0,00	0,00	0,00	0
5	Demolition of **housing and/or administration facilities**	m2	0,00	269,52	1,00	1,10	0
6	**Opencast rehabilitation** including final voids and ramps	ha	0,00	141 284,50	1,00	1,10	0
7	Sealing of **shafts, adits and inclines**	m3	0,00	0,00	0,00	0,00	0
8(A)	Rehabilitation of **overburden and spoils**	ha	0,00	94 189,67	1,00	1,10	0
8(B)	Rehabilitation of processing waste **deposits and evaporation ponds (basic salt-producing waste)**	ha	0,00	117 311,53	1,00	1,10	0
8(C)	Rehabilitation of processing waste **deposits and evaporation ponds (acidic, metal-rich waste)**	ha	0,00	382 842,31	1,00	1,10	0
9	Rehabilitation of **subsided areas**	ha	0,30	0,00	0,00	0,00	0
10	**General surface rehabilitation**	ha	0,00	105 841,53	1,00	1,00	0
11	**River diversions**	ha	0,00	0,00	0,00	0,00	0
12	**Fencing**	m	0,00	85,11	1,00	1,10	0
13	**Water management**	ha	5,00	26 764,51	1,00	1,10	147 205
14	2 to 3 years of **maintenance and aftercare**	ha	5,00	9 929,63	1,00	1,10	54 613
15A	Specialist study	Sum	0,00	0,00	0,00	0,00	
15B	Specialist studies (soil remediation)	ha	0,00	0,00	0,00	0,00	0,00
					SubTotal 1		**207 601**
				(Sum of items 1 to 15 above)			
1	Preliminary and General	6,0%	if Subtotal 1 > 100 000 000		Weighting factor 2		
		12,0%	if Subtotal 1 < 100 000 000			0,00	0
7	Contingency		10,0% of Subtotal 1				20 760
					SubTotal 2		**228 361**
				(Subtotal 1 plus sum of management and contingency)			
					Add Vat (14%)		31 971
					GRAND TOTAL		**260 332**
					(Subtotal 2 plus VAT)		

(ii) Confirm that this amount can be provided for from operating expenditure

The amount of R 260 332 for financial provision was calculated for the mining application. NMX Construction cc will provide the financial provision in the form of a bank guarantee upon the successful granting of the mining permit.

t) Specific Information required by the competent Authority

i) 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:

(1) Impact on the socio-economic conditions of any directly affected person.

- A consultation process as required by NEMA EIA Regulations was undertaken, land owners, affected government departments and any other interested and affected parties were notified of the proposed mining activities and also given the opportunity to review and comment of the environmental reports.
- The consultation process established that there are no socio-economic impacts on any of the directly affected person.

(2) Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act.

There are no sites of cultural and heritage resources that have been identified within the application area,

t) Other matters required in terms of sections 24(4) (a) and (b) of the Act.

Public consultation has been fully conducted and all probable impacts thoroughly assessed as required by the Act.

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1. Final Environmental Management Programme.

a) Details of the EAP,

The requirement f or the provision of the details and expertise of the EAP are included in PART A, section 1(a).

b) Description of the Aspects of the Activity

The aspects of the activity are already included in PART A of this report.

c) Composite Map

d) Description of Impact management objectives including management statements

i) Determination of closure objectives.

(ensure that the closure objectives are informed by the type of environment described).

- ❖ Ensure that all pre-mining existing roads are left in good usable state and all created roads are fully rehabilitated;
- ❖ Ensure that a post-closure monitoring programme is established and resources provided for its success;
- ❖ Restore the river bed to near its pre-mining conditions as far as practicable allowing free flow of river water;
- ❖ Ensure that all introduced alien invasive plant species are controlled and success monitored;
- ❖ Ensure river bank stability by re-introducing indigenous plant species along the disturbed river banks;
- ❖ Ensure that all materials and equipment brought to site are shipped off site as soon as the mining operations cease;
- ❖ Ensure that the area is free draining and no-polluting; and
- ❖ Ensure that vegetation re-establishment is successful.

ii) Volumes and rate of water use required for the operation.

The mining operation will require no water; however, the activity will be undertaken within a drainage channel (stream).

iii) Has a water use licence has been applied for?

The operation triggers Section 21(i) of the National Water Act (36 of 1998) and therefore a Water Use Licence will be required. The license has been applied for with the North West Department of Water Affairs.

iv) Impacts to be mitigated in their respective phases

Measures to rehabilitate the environment affected by the undertaking of any listed activity

Table 1-1: Impacts Assessment & Remediation

Table 1-2: Impact Assessment and Remediation

Potential Impact	**Phase**	**Size and Scale** of Disturbance	**Aspects Affected**	**Mitigation Type**	**Mitigation Measures**	**Standard to be Achieved**	**Compliance with Standards**	**Time Period for Implementation**
Site Access								
Denied site access by property owners reducing the available 2 years of mining	Planning; Operational	–	Property owners	Control through consultation	✓ Consult all affected properties' owners and obtain signed access agreement; ✓ Comply with property owners' conditions as signed and agreed on in access agreement contracts.	Protection of property owners' rights; South African Constitution	Land owners will be consulted and their complaints during mining operations will be registered and attended to timeously.	Pre-mining and during operations
Security threat to private land owners and their properties.	Operational	Local Area – surrounding mining site	Property owners	Control through consultation	✓ All site personnel must have identification cards; ✓ Operational times must be communicated to property owners;	Protection of property owners' rights; South African Constitution	Land owners will be consulted and their complaints during mining operations will be registered and attended to timeously.	Throughout operational phase
Access road establishment								
Clearing of vegetation to create access roads	Site Establishment; Operational	5 Ha	Vegetation	✓ Control through demarcation of mining area; ✓ Control through site induction;	✓ Access to mining site must be through the two existing gravel roads; ✓ Site internal roads must be created with the approval of site EO/ECO and property owners must be notified;	Preservation of indigenous vegetation; Closure objectives	Monthly monitoring by the EO against the CA conditions and any other	Throughout site establishment and operational phase

Potential Impact	Phase	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
				✓ Limiting access to existing roads.	✓ Creation of multiple tracks is prohibited; ✓ Created roads must not be compacted by the use of compaction machinery; ✓ Rehabilitation of old no-longer in use internal access roads and mark them as a No-Go area.		relevant standards, regulations and legislations.	
Destruction of habitats and loss of fauna	Site Establishment; Operational	5 Ha	Fauna	✓ Control through site induction; ✓ Control through search & Rescue; ✓ Avoid breeding & obvious habitats	✓ Site walk must be conducted before any road is created thus to identify habitats and to locate faunas within the area of interest and move them to adjacent areas; ✓ Where possible obvious habitats and breeding areas must be avoided;	Preserve local ecology; Closure objectives	Monthly monitoring by the EO against the CA conditions and any other relevant standards, regulations and legislations.	Throughout site establishment and operational phase
Erosion	Site Establishment; Operational	500 m^2	Soil	✓ Control through storm water diversion beams	✓ Access roads must not run parallel with storm water channels; ✓ Storm water control beams must be used to control parallel flow of water with the road	Closure objectives; Environmental Authorisation	Monthly monitoring by the EO against the CA conditions and any other relevant standards, regulations and legislations.	Throughout site establishment and operational phase
Stockpiling Area Establishment								
Removal of vegetation	Operational	800 m^2	Vegetation	✓ Control through demarcation of stockpiling area; ✓ Control through site induction;	✓ A site plan which locates the stockpiling areas must be developed; ✓ Removal of vegetation must be limited to stockpiling area; ✓ Stockpiling areas must be established where least vegetation will be removed.	Closure objectives; Environmental Authorisation	Monthly monitoring by the EO against the CA conditions and any other relevant standards, regulations and legislations.	Throughout site establishment and operational phase

Potential Impact	Phase	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
Destruction of habitats and loss of fauna	Operational	800 m²	Fauna	✓ Control through site induction; ✓ Control through search & Rescue; ✓ Avoid breeding & obvious habitats	✓ Stockpiling areas must not be established where obvious habitats and breeding areas exists; ✓ Search & rescue must be conducted before clearing stockpiling area.	Closure objectives; Environmental Authorisation	Monthly monitoring by the EO against the CA conditions and any other relevant standards, regulations and legislations.	Throughout site establishment and operational phase
Waste rock dumping area establishment								
Flow of dirty water from waste dump area	**Operational**	**800 m²**	**Water**	**Control through implementation of Impacts Management as provided for in this EMPr**	✓ **Locate outside the wet zones i.e. outside the 1:100-year flood zone;** ✓ **Create stormwater diversion channels around the dump area**	**NEM: WA (59;2008);** **Closure objectives**	Monthly monitoring by the EO against the CA conditions and any other relevant standards, regulations and legislations.	Throughout operational phase
Clearing of vegetation to establish dump area	**Operational**	**800 m²**	**Vegetation**	✓ **Control through implementation of Impacts Management as provided for in this EMPr;** ✓ **Remedy through rehabilitation.**	✓ **The boundaries of the waste rock dump area must be clearly demarcated and vegetation removal limited to the demarcated area;** ✓ **Verification of absence of threatened and/or protected must be undertaken before clearing takes place.**	**NEM: BA (10;2004)** **Closure objectives**	Monthly monitoring by the EO against the CA conditions and any other relevant standards, regulations and legislations.	Throughout operational phase
Destruction of habitats and loss of fauna	Operational	800 m²	Fauna	✓ Control through site induction; ✓ Control through search & Rescue; ✓ Avoid breeding & obvious habitats	✓ Dumping area must not be established where obvious habitats and breeding areas exists; ✓ Search & rescue must be conducted before clearing stockpiling area.	Closure objectives; Environmental Authorisation	Monthly monitoring by the EO against the CA conditions and any other relevant standards, regulations and legislations.	Throughout site establishment and operational phase

Potential Impact	Phase	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
Pollution Control Dam construction								
Collapse and/or overflow of PCD resulting in contamination of surface water	**Operational;** **Post Closure**	**750 m²**	**Water**	✓ **Compliance to PCD construction regulations;** ✓ **Control through continuous monitoring**	✓ **The PCD must be constructed in terms of the relevant regulations of the NEM: WA (59;2008);** ✓ **The PCD must be located outside the 1:100-year floodline;** ✓ **The PCD must be inspected to identify signs of collapse or overflows;** ✓ **Upon mine closure the PCD must be decommissioned ensuring that no contamination occurs,** ✓ **Acid Mine generation must be monitored around the PCD.**	**NEM: WA (59;2008); Regulation 636 of 2013;** **Closure objectives**	Monthly monitoring by the EO against the CA conditions and any other relevant standards, regulations and legislations.	Throughout operational phase; Post closure
Removal of topsoil and stockpiling								
Loss and contamination of topsoil during clearing to access high quality silica Gold Ore.	**Operational &** **Post Closure**	**4.89 Ha**	**Soil**	**Control through separate stockpiling**	✓ **The topsoil must be stockpiled separately from any other materials;** ✓ **Topsoil stockpiling area must be well drained to prevent dirty water accumulation;** ✓ **Any substances with the potential to contaminate the soil must be stored at least 10 metres away from the stockpiling area;** ✓ **The topsoil stockpiles must not exceed 1.5 metres in height;**	**Closure objectives;** **Rehabilitation plan**	Monthly monitoring by the EO against the CA conditions and any other relevant standards, regulations and legislations.; Post closure Monitoring	Throughout operational phase; Post closure

Potential Impact	Phase	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
					✓ Topsoil must only be handled twice, i.e. when stockpiled ✓ Once the mined out areas have been backfilled the topsoil must be spread and vegetation regrowth facilitated.			
Silica Gold Ore Extraction and stockpiling								
Contamination of water during extraction of Gold Ore from the river bed during wet season. The extortion process will impurity the stream water and which will appear muddy.	Operational; Post closure	5 Ha	Water	Control through diversion; Control through scheduling	✓ The mining activities must be prioritised during dry periods, the stream flows periodically after heavy rains therefore scheduling for dry periods is highly possible; ✓ The downstream water users must be made aware of mining schedule during stream flow periods; ✓ When stream flow volume is minimal, the water should be diverted away from the working areas, ✓ Once a section is mined out, that specific site must be backfilled with waste rock and rehabilitated; ✓ The riverbed must be levelled to prevent ponding which may results in acid water generation	Closure objectives; Rehabilitation plan	Monthly monitoring by the EO against the CA conditions and any other relevant standards, regulations and legislations.; Post closure Monitoring	Throughout operational phase; Post closure

Potential Impact	Phase	Size and Scale of Disturbance	Aspects Affected	Mitigation Type	Mitigation Measures	Standard to be Achieved	Compliance with Standards	Time Period for Implementation
Silica Gold Ore transportation off site								
Air pollution – dust from moving transportation trucks (the truck load)	**Operational**	**Local**	**Air**	**Control through dust suppression mechanisms**	✓ **The transported Gold Ore must be humid to prevent dust, when to dry the Gold Ore must be watered.**	**Air Quality standards**	Monthly monitoring by the EO against the CA conditions and relevant standards and regulations.	Throughout operational phase;
Site Rehabilitation								
Water contamination from instream rehabilitation activities	**Post closure**	**4.89 Ha**	**Water**	**Control through scheduling**	✓ **River bed rehabilitation must only be undertaken during dry periods;**	**Water Quality Standards; EA; EMPr.**	**Monitoring by site Environmental Personnel**	**Post closure**

e) Impact Management Outcomes

(A description of impact management outcomes, identifying the standard of impact management required for the aspects contemplated in paragraph)

Activity	Potential Impact	Aspects Affected	Phase	Mitigation Type	Standard To Be Achieved
Refer to page Table 1-1: Impacts Assessment & Remediation					

f) Impact Management Actions

(A description of impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (c) and (d) will be achieved).

Activity	Potential Impact	Mitigation Type	Time Period For Implementation	Compliance with Standards
Refer to page Table 1-1: Impacts Assessment & Remediation				

(i) Financial Provision

(1) Determination of the amount of Financial Provision

(a) Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under the Regulation.

- ❖ Ensure that all pre-mining existing roads are left in good usable state and all created roads are fully rehabilitated;
- ❖ Ensure that a post-closure monitoring programme is established and resources provided for its success;
- ❖ Restore the river bed to near its pre-mining conditions as far as practicable allowing free flow of river water;
- ❖ Ensure that all introduced alien invasive plant species are controlled and success monitored;
- ❖ Ensure river bank stability by re-introducing indigenous plant species along the disturbed river banks;
- ❖ Ensure that all materials and equipment brought to site are shipped off site as soon as the mining operations cease;
- ❖ Ensure that the area is free draining and no-polluting; and
- ❖ Ensure that vegetation re-establishment is successful.

(b) Confirm specifically that the environmental objectives in relation to closure have been consulted with landowner and interested and affected parties.

The Landowner, Interested and Affected Parties have been consulted on the closure objectives and rehabilitation during the consultation period and this report was provided to the IAPs for a period of 30 days for review.

(c) Provide a rehabilitation plan that describes and shows the scale and aerial extent of the main mining activities, including the anticipated mining area at the time of closure.

(Refer to **Appendix 04** for the Rehabilitation Plans attached).

(d) Explain why it can be confirmed that the rehabilitation plan is compatible with the closure objectives.

The rehabilitation plan was developed based on the current state of site environment and with the review of closure objectives. The rehabilitation plan was developed and specifically tailored for the proposed site. The rehabilitation plan will ensure that all the closure objectives are realised and Mulelu Matamela Minerals fulfil its legal obligation in restoring the mining site to an agreed standard. A monitoring program will be developed, approved and implemented to monitor and control post-mining impacts.

(e) Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment in accordance with the applicable guideline.

Table 1-3: Quantum Calculation

CALCULATION OF THE QUANTUM

Risk Class
Area Sensitivity

No.	Description	Unit	A	B	C	D	E=A*B*C*D
			Quantity	Master rate	Multiplication factor	Weighting factor 1	Amount (rands)
1	Dismantling of **processing plant and related structures** (including overland conveyors and powerlines)	m3	0,00	9,67	1,00	1,10	0
2(A)	Demolition of **steel buildings and structures**	m2	0,00	134,76	1,00	1,10	0
2(B)	Demolition of **reinforced concrete buildings and structures**	m2	0,00	198,59	1,00	1,10	0
3	Rehabilitation of **access roads**	m2	160,00	32,86	1,00	1,10	5 783
4(A)	Demolition and rehabilitation of **electrified railway lines**	m	0,00	0,00	0,00	0,00	0
4(B)	Demolition and rehabilitation of **non-electrified railway lines**	m	0,00	0,00	0,00	0,00	0
5	Demolition of **housing and/or administration facilities**	m2	0,00	269,52	1,00	1,10	0
6	**Opencast rehabilitation** including final voids and ramps	ha	0,00	141 284,50	1,00	1,10	0
7	Sealing of **shafts, adits and inclines**	m3	0,00	0,00	0,00	0,00	0
8(A)	Rehabilitation of **overburden and spoils**	ha	0,00	94 189,67	1,00	1,10	0
8(B)	Rehabilitation of processing waste **deposits and evaporation ponds (basic salt-producing waste)**	ha	0,00	117 311,53	1,00	1,10	0
8(C)	Rehabilitation of processing waste **deposits and evaporation ponds (acidic, metal-rich waste)**	ha	0,00	382 842,31	1,00	1,10	0
9	Rehabilitation of **subsided areas**	ha	0,30	0,00	0,00	0,00	0
10	**General surface rehabilitation**	ha	0,00	105 841,53	1,00	1,00	0
11	**River diversions**	ha	0,00	0,00	0,00	0,00	0
12	**Fencing**	m	0,00	85,11	1,00	1,10	0
13	**Water management**	ha	5,00	26 764,51	1,00	1,10	147 205
14	2 to 3 years of **maintenance and aftercare**	ha	5,00	9 929,63	1,00	1,10	54 613
15A	Specialist study	Sum	0,00	0,00	0,00	0,00	
15B	Specialist studies (soil remediation)	ha	0,00	0,00	0,00	0,00	0,00
						SubTotal 1	**207 601**
						(Sum of items 1 to 15 above)	
1	Preliminary and General	6,0% if Subtotal 1 > 100 000 000			Weighting factor 2		
		12,0% if Subtotal 1 < 100 000 000			0,00		0
7	Contingency	10,0% of Subtotal 1					20 760
						SubTotal 2	**228 361**
						(Subtotal 1 plus sum of management and contingency)	
						Add Vat (14%)	31 971
						GRAND TOTAL	**260 332**
						(Subtotal 2 plus VAT)	

(f) Confirm that the financial provision will be provided as determined.

The financial provision will be provided as determined.

Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including

g) Monitoring of Impact Management Actions

h) Monitoring and reporting frequency

i) Responsible persons

j) Time period for implementing impact management actions

k) Mechanism for monitoring compliance

Table 1-4: Impacts Monitoring

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Gold Ore mining	Legal transgression	✓ Permit; ✓ Water use license; ✓ Environmental Authorisation ✓ Acts, Regulations and any other site permits	Applicant/ Site EO/ ECO	Weekly monitoring; Monitoring reports must be submitted quarterly to DMR
Creation of access roads	Soil Erosion; Soil Compaction	✓ Existing roads are used as far as practicable; ✓ No multiple tracks are created; ✓ Erosion control beams effectiveness;	Applicant/ Site EO/ ECO	After creation of each access road; Monitoring reports must be submitted quarterly.
Vegetation Clearing	Loss of important indigenous plant species and/or protected & Threatened species; Introduction of alien invasive plants.	✓ Vegetation clearing limited to working area; ✓ Site walk to identify absence/ presence of threatened and/or protected species; ✓ Control of alien invasive plants;	Applicant/ Site EO/ ECO	Monitoring must be done on each vegetation clearing phase of the project. Monitoring reports must be submitted quarterly to DMR.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Gold Ore extraction	Water contamination; Water ponding; Acid mine generation	✓ Prevention of ponding dams; ✓ Control of contaminated water ✓ Separation of clean and contaminated water; ✓ Notification of other water users; ✓ Stream water diversion.	Applicant/ Site EO/ ECO	During Rainy periods when the stream is flowing and monitoring reports must be submitted on a quarterly basis to DMR
Operation of Pollution Control Dam	Dam wall strength; Dam overflow	Containment of contaminated pollutants within the PCD	Applicant/ Site EO/ ECO	Weekly monitoring; Monitoring reports must be submitted quarterly to DMR
Topsoil stockpiling	Stockpiling erosion; Stockpiling contamination;	Erosion & contamination prevention.	Applicant/ Site EO/ ECO	Weekly monitoring; Monitoring reports must be submitted quarterly to DMR
Operation of site machinery	Noise generation; Dust generation	Dust suppression; Machinery operational standards; IAPs consultation.	Applicant/ Site EO/ ECO	Weekly monitoring; Monitoring reports must be submitted quarterly to DMR

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Site Personnel	Security breach	Site employees' identification; Land owners' complaints; Access restriction to private properties (beyond mining area).	Applicant/ Site EO/ ECO	Weekly monitoring; Monitoring reports must be submitted quarterly to DMR

General monitoring and reporting

- The environmentalist/consultant/ mine manager will ensure that the integrity of the lining of all dirty water management facilities is tested at least quarterly.
- The environmentalist/consultant/ mine manager will inspect all water management facilities and associated pipelines at least weekly to ensure there are no leaks which would result in loss of water and that they are functioning optimally.
- The ground water flow dynamics will be calibrated every two years with updated monitoring data. This will assist with management and long term risk prediction and management.
- The environmentalist/consultant/ mine manager will be responsible for inspection of sites and keeping records of all monitoring activities.
- All incidents and issues will be recorded, as will the actions taken to address issues.

Action required

Should significant changes in qualities or levels be observed then:

- All medium risk facilities will be inspected to ensure no severe problems occur in these areas.
- Any issues observed will be reported to the environmental site manager and respective site manager
- All leaks identified will be repaired.
- Silt build-up in water management facilities/ dams will be cleared and deposited in soil stockpiles if clean or in residue deposits if dirty.

l) Indicate the frequency of the submission of the performance assessment/environmental audit report.

Annual performance assessments must be undertaken on the EMPr. These reports must also include the assessment of the financial provision. The reports should be submitted to the DMR.

m) Environmental Awareness Plan

(1) Manner in which the applicant intends to inform his or her employees of any environmental risk which may result from their work

All the employees including visitors will undergo and environmental induction to ensure that all potential impacts, best practice guidelines and policies are communicated. The induction process will be conducted as per the attached Awareness Program (Appendix 03). The induction will cover amongst others the following:

- ❖ Legal requirements for the site i.e. EA, EMPr and WUL;
- ❖ Waste management;
- ❖ Incident and accident Management; and
- ❖ Emergency Response Procedure.

(2) Manner in which risks will be dealt with in order to avoid pollution or the degradation of the environment

The following steps will be undertaken to ensure that risks are identified at the earliest and ensure that they are avoided:

(a) Delegation of a Project Environmental Officer

An Environmental Officer (EO) must be appointed before any activity can be undertaken on site. The officer must be a qualified environmental Practitioner.

(b) Notice of Commencement

North West Department of Mineral Resource must be notified in writing 2 weeks before mining activities are undertaken.

(c) Environmental Documents

Prior to commencement of work on site, the EO is to ensure that the following documents are available on site:

- ❖ The Environmental Authorisation;
- ❖ Water use license;

- ❖ The final approved Environmental Management Programme (EMPr); and
- ❖ Method statements for different site activities:

(d) Environmental Monitoring

The EO is to undertake monthly internal environmental compliance audits and prepare monthly environmental audit reports during the construction period. The internal environmental audit must include the following information:

(i) An assessment of the Contractor's compliance with:

- ❖ The relevant conditions of all permits: EA, WUL, etc.;
- ❖ The approved Environmental Management Programme;
- ❖ The approved Construction Site Plan.
- ❖ The approved Construction Method Statements.

(ii) Provide feedback on:

- ❖ Environmental training undertaken;
- ❖ Any environmental incidents or complaints;
- ❖ Waste type quantities recycled and disposed;
- ❖ Any environmental issues identified;
- ❖ The results of any environmental investigations;
- ❖ Actions undertaken from previous audits; and
- ❖ Recommended actions to be undertaken.

(e) Environmental Training

Prior to working on site, every person that will be undertaking any retrofit activities must receive training on the relevant environmental management requirements. The EO is to ensure that the environmental training includes the relevant requirements from:

- ❖ All site authorisations; and
- ❖ The final approved Environmental Management Programme.

n) Specific information required by the Competent Authority

On the 18th of April 2018 the Limpopo Department of Mineral Resources requested that the application form be amended to include the following listed activities:

- ❖ Category A, Activity 12 of the NEM: WA (59:2008); and
- ❖ Category A, Activity 15 of the NEM: WA (59:2008).

2. UNDERTAKING

The EAP herewith confirms

a. the correctness of the information provided in the reports ☒

b. the inclusion of comments and inputs from stakeholders and I&APs;☒

c. the inclusion of inputs and recommendations from the specialist reports where relevant;☒ and

d. that the information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein.☒

Ramulondi Vincent Khuliso 

Signature of the environmental assessment practitioner:

Mielelani Consultancy

Name of company:

03 October 2018

Date:

-END-

APPENDCES

APPENDIX 01: Locality Map

APPENDIX 02: PUBLIC CONSULTATION

APPENDIX 03: ENVIRONMENTAL AWARENESS PLAN

1. Introduction

Legislation requires that an prospecting/Prospecting company who prepares an environmental management program must develop an environmental awareness plan describing the manner in which the company intends to inform his or her employees of any environmental risks which may result from their work and the manner in which the risks must be dealt with in order to avoid pollution or the degradation of the environment. In recognition of the need to protect our environment, environmental management should not only be seen as a legal obligation but also as a moral obligation.

1.1. The Environmental Awareness Plan (EAP)

The EAP forms part of the EMPr and is intended to create the required awareness and culture with personnel and contractors/service providers on environmental safety and health issues associated with the prospecting activities.

1.2. The applicant's policy on environmental awareness

This Environmental Awareness Plan (EAP) will serve as the basis for the induction of all new employees (as well as contractors pending the nature of their work on site) on matters as described herein and read in conjunction with the EMPr. The Plan will also be used to hone awareness of all employees on a continuous basis. Specific environmental awareness performance criteria will also form part of the job descriptions of employees, to ensure diligence and full responsibility at all levels of the organisational work force.

1.3. Fostering environmental awareness

General environmental awareness will be fostered among the project's workforce to encourage the implementation of environmentally sound practices throughout its duration. This will ensure that environmental accidents are minimized and environmental compliance maximized.

Environmental awareness will be fostered in the following manner:

a) Induction course for all workers on site, before commencing work on site.

b) Refresher courses as and when required

c) Daily toolbox talks at the start of each day with all workers coming on site, where workers can be alerted to particular environmental concerns

associated with their tasks for that day or the area/habitat in which they are working.

d) Taking part in national and international environmental campaigns like National Marine Week, National arbour day, National Wetlands day exacta.

e) Displaying of information posters and other environmental awareness material in the general assembly points.

1.4. Training and environmental awareness

The company accepts that environmental awareness training is critical for the workforce to understand how they can play a role in achieving the objectives specified in the EMPr and ensure that the actions specified in the EMPr are implemented effectively and efficiently. It is vital that all personnel are adequately trained to perform their designated tasks to an acceptable standard.

2. The environmental awareness training course

All employees should attend the course, regardless of position, status or level of responsibility. With a background of basic environmental awareness and an understanding of basic environmental issues and sensitivities, personnel may be motivated and empowered to do their share in helping to maintain the integrity of the environment on the prospecting site through environmental impact management.

The goal of this course is therefore to enable a shared understanding and common vision of the environment, the impact of a prospecting operation on the environment (and why this is important) and the role of prospecting personnel in terms of environmental management and compliance.

The induction course will compose of the following steps:

- The first step will include background discussion of the environment concept: of what it comprises and how we interact with it.
- The second step will be a description of the components and phases of the specific Prospecting operation.
- The third step will be a general account of how the Prospecting operation and its associated activities can affect the environment, giving rise to what we call Environmental Impacts.

- The fourth and most important step will be a discussion of what staff can do in order to help prevent the negative environmental impacts from degrading our environment. This is known as Environmental Impact Management.

3. Course content

The following can be seen as draft course content as it will be building on as specific needs arrases and will be supplemented with the handout of reading material and extracts of the EMPr on which the course will be based.

3.1. The environment

The environment consists essentially of the living environment, the non-living environment and the man-made environment. The living environment consists of our plant and animal resources. The non-living environment includes the soil, water and geological resources. The man-made environment comprises our infrastructure, social, cultural and archaeological resources.

These environments depend on one another, and man depends on them all for his survival. Damage to one will be felt by so we must fry to protect the as well as their interactions with one another as they occur in nature.

When undertaking a Prospecting operation or any other form of development this concept must be kept in mind. Development must be implemented in such a way that we benefit today without compromising the ability of future generations to benefit as well. Employees should understand this concept of sustainability and sustainable development.

3.2. Description of the components and phases of the operation

The project description should be explained as part of induction together with the main components or activities that can affect the environment, giving rise to what we call environmental impacts. The Prospecting operation consists of a number of different components

3.3. Description of Environmental Impacts

A general account of how the Prospecting operation and associated activities can affect the environment must be explained. This is basically a description of concept of environmental impacts.

a) What is an Environmental Impact?

An environmental impact is the result, either good or bad, of man's actions on the natural environment This results in one or many changes in the environment may also affect the availability of resources and the environment's capacity to function.

Impacts can occur either as a result of:

- The use of a resource;
- Or the pollution of a resource.

In addition, impacts can be categorised as the following:

- Foreseen, such as the necessary clearing of the vegetation before Prospecting begins, or Unforeseen, such as the flooding of an area following heavy rains;
- **Avoidable**, such as the unnecessary spillage of diesel during refuelling- or **Unavoidable**, such as the disturbance created during drilling; **Simple**- such as litter untidying the prospecting site, or **Cumulative** which is a collective impact from different existing activities.

a) Environmental Impacts

Typical environmental impacts anticipated on a Prospecting site include the following:

The loss of plants; The loss of animals; Soil pollution; Dust liberation; Soil compaction and erosion; and Water pollution;

b) Causes of environmental impacts

These environmental are caused primarily by inadequate planning & not adhering to the EMPr Specifications'.

- The inadequate planning & preparation of the Prospecting site;
- The uncontrolled expansion of the Prospecting site footprint;
- The uncontrolled activity of Prospecting staff;
- The injudicious removal / disturbance of vegetation and habitat;
- The unnecessary loss of soil;
- Uncontrolled vehicular movement & circulation;
- The haphazard storage of vehicles, equipment and material;

- The uncontrolled servicing, repair and refuelling of vehicles;
- Unclear policy on solid waste management;
- Unclear policy on waste water;
- The uninformed use, storage and disposal of hazardous material;
- The erosive power of storm water and runoff;
- Unintentional fires;

3.4. Description of Environmental Impacts Mitigation

The fourth and most important step of an induction course will be a discussion of what staff can do in order to help prevent the negative environmental impacts from degrading their environment. This is known as Environmental Impact Management and is also described in the Environmental Management Programme. The coarse discussion should also include general environmental code of conduct practices such as:

Impact management: Prospecting site establishment (general):

- Do not cross any site fences;
- Do not walk, drive or store material in rehabilitating areas;
- Report any access into fenced off areas to the foreman environmental manager;
- Use only areas designated for certain construction activities;
- Do not access any stream or water body without permission;
- Report any headstones, graves or human remains you may find to the foreman environmental manager;

Impact management: Construction phase (general):

- Only eat, cook, sleep and recreate in the areas designated on site;
- Do not bathe anywhere except in the designated areas on site;
- Always use the toilet facilities provided;
- Only use the water provided on site- do not collect water from or dispose water into a natural water course;
- Always make use of the specified Prospecting site safety measures;
- Do not hunt, kill or injure any animals anywhere on site;
- Inform the foreman environmental of any dangerous or problem

- Do not leave any food or rubbish where scavengers can get at it. Impact management: Health and safety (general):
- Always use the toilet & hand washing facilities provided.
- Only use the water provided on site - do not collect water from or dispose water into a natural water course.
- Make use of the specified protective gear for noisy and dusty conditions.
- Always wear proper protective head and foot gear while on site.
- Know where to find a list of emergency numbers in the event of one.
- Report accidents, injuries and unsafe site conditions to the Safety Officer.

Impact management: Vegetation clearing (general):

- Do not damage, destroy or remove any significant tree that has been marked:
- No firewood may be harvested without permission;
- Newly planted trees may not be disturbed in any way;
- Do not excavate beneath the crown of any tree that has been marked;
- No conserved tree may be used to support or hang anything in;
- Report to the foreman environmental manager any damage to any significant tree that has been marked.

Impact management: Top Soil removal and storage (general):

- Only excavate soil, gavel, rock etc. from designated areas;
- Stockpile soil only as instructed and at the time it is instructed;
- Do not make new stockpiles without permission;
- Do not use soil or remove soil from any stockpile without permission;
- Do not walk. drive or store any equipment. machinery or material on any stockpile.

Impact management: Access and transport (general):

- Only drive on designated roads and tracks;
- Move obstacles out of the way rather than drive around them;
- Only cross drainage lines at designated points;
- Always drive within the specified speed limit.

Impact management: Storage of vehicles, equipment and material (general):

- Do not leave machinery and equipment standing around if not in use;
- Only park vehicles in designated areas;
- Do not park heavy vehicles or store equipment under or near trees
- Do not store machinery, vehicles or materials in undisturbed or rehabilitating areas.

Impact management Servicing. repair and refuelling of vehicles (general).

- Only service machinery and vehicles in designated areas;
- Regularly check your vehicle for fuel and oil leaks;
- Inform the foreman environmental manager of leaking vehicles and machinery so that he can schedule repairs;
- Only refuel by means of a pump and on the bund created for that purpose;
- Immediately clean any accidental fuel and oil spills - do not hose spills into the natural environment;
- Dispose of contaminated soil as hazardous waste in the correct location on site.

Impact management: Solid waste management (general):

- Do not litter - make use of refuse bins provided;
- Concrete may only be mixed in designated areas and not directly on the ground;
- Do not hose spills into the natural environment - inform the foreman environmental manager of spills you are unable to clean yourself;
- Dispose of construction rubble only in specified storage areas - if in doubt, ask;
- Do not bury, hide or burn any waste of any nature;
- Inform the foreman of any illegal litter or dumping site that you encounter.
- Impact management: Waste water management (general):
- Do not use any natural water course to wash machinery, vehicles or equipment;
- Only wash machinery, vehicles or equipment in designated areas;
- Conserve water and report any leaks and overflow to the foreman,

Impact management: Management of hazardous material (General):

- Make sure that you know how to handle all hazardous substances;
- Do not access stores for hazardous substances without permission;
- Immediately clean any minor accidental spills and leaks;
- Do not hose any leaks or spills into the natural environment;
- Dispose of all hazardous waste in specified storage areas - if in doubt, ask;
- Immediately report any major leaks and spills to the foreman environmental manager.

Impact management: Fire management (General)

- Do not make open fires except in permitted areas and at permitted times;
- Do not leave any fires unattended. Extinguish these before you leave the area;
- All cooking is to be done on gas / electric stoves and only in the areas provided;
- Ensure that you know where firefighting equipment is located.

APPENDIX 04: REHABILITATION PLAN

APPENDIX 05: EAP CV

APPENDIX 06: SPECIALIST STUDIES

APPENDIX 07: LAND CLAIM REPORT