



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

Draft for Public Review and Comment
**Review and Comment period: 24th October 2018 to 23rd
November 2018**

Please ensure that your comments are submitted on or before the 23rd November 2018 to the contact details on the next page.

Please note that certain sections of this report can **only** be completed / updated after the 30 day review and commenting period. These sections are highlighted in yellow.

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)

DMR REFERENCE NO: NW 30/5/1/1/3/2/1/ 12443 PR
APPLICANT: Khuma Mining and Exploration (Pty) Ltd
PROJECT: NES Project - Prospecting Right Application
MINERALS: Gold, Silver and Associated Precious Metals

The format of this report follows the template provided by the competent authority (The Department of Mineral Resources) obtained from www.dmr.gov.za.

This draft report is being provided to the public in terms of the National Environmental Management Act (NEMA), No. 107 of 1998, as amended and the EIA Regulations, 2014 (GN R 982 of 4 December 2014), as amended in order for the public to have the opportunity to review and provide input into the application process, which will be used when finalising the report for submission to the authorities for a decision.

Umhlaba Environmental Consulting CC has been appointed by the applicant to undertake the Basic Assessment and Public Participation processes required for this application. Should you wish to submit comments on the contents of this report please refer to the Background Information Document (BID) accessible online at <http://www.umhlaba.co.za/public-participation/> or contact Andrew Nicholson of Umhlaba Environmental Consulting CC at the details below. Please ensure that your comments are submitted on or before the 23rd November 2018.

Umhlaba Environmental Consulting CC

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ABBREVIATIONS

Abbreviations	Definition
BAR	Basic Assessment Report
CV	Curriculum Vitae
dBA	A-weighted decibel
DMR	Department of Mineral Resources
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
EIA	Environmental impact assessment
EIR	Environmental Impact Report
EMF	Environmental Management Framework
EMPr	Environmental Management Programme Report
GN	General Notice
Ha	Hectares
I&APs	Interested and/or affected parties
KME	Khuma Mining and Exploration (Pty) Ltd
MPRDA	Mineral and Petroleum Resources Development Act
NEMA	National Environmental Management Act
SACNSP	South African Council for Natural Scientific Professionals
SANS	South African National Standards
WULA	Water Use License Application

1. IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resources Development Act (MPRDA), No. 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 (EIA) and an Environmental Management Programme (EMP) report in terms of the National Environmental Management Act (NEMA), No. 107 of 1998, it cannot be concluded that the said activities will not result in unacceptable pollution, ecological degradation or damage to the environment.

In terms of Regulation 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 Regulation 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.

2. 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 focussed on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within the 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.

PART A:

SCOPE OF ASSESSMENT AND BASIC IMPACT ASSESSMENT REPORT

Khuma Mining and Exploration (Pty) Ltd (herein after referred to as KME) has applied for a prospecting right with the objective being to identify whether there are economically viable concentrations of gold, silver and associated precious metals within the proposed project area which is located to the north and east of the now defunct (since 1991) Stilfontein Gold Mining Company Limited.

Prospecting activities are proposed to take place in the form of both non-invasive prospecting (i.e reviewing historical records of the old Stilfontein Gold Mine) and invasive prospecting which will be restricted to the drilling of boreholes. If the results of the drilling campaign are positive, prospecting will proceed to mining feasibility studies.

3. CONTACT PERSON AND CORRESPONDENCE ADDRESS

a) DETAILS OF

(i) Details of the EAP

Name of the Practitioner:	Andrew Nicholson
Tel No.:	011 791 3389
Fax No.:	011 791 3384
E-mail Address:	andrew@umhlaba.co.za

(ii) Expertise of the EAP

(1) *The qualifications of the EAP*

- BSC Hons Biological Sciences / Post Graduate Degree in Natural Resource Management
- See **Appendix A.1**.

(2) *Summary of the EAP's past experience*

(In carrying out the Environmental Impact Assessment Procedure).

- Over 16 years of experience of environmental management for the mining industry of South Africa.
- See **Appendix A.1**.

b) LOCATION OF THE OVERALL ACTIVITY

Farm Name:	See Table 1.
Application Area (Ha);	4045.9807 Ha
Magisterial District:	City of Matlosana
Distance and Direction from Nearest Town:	Immediately to the north and east of the town Stilfontein in the North West Province. See Figure 1.
21 Digit Surveyor General Code for each Farm Portion:	See Table 1.

Table 1: List of farm portions affected by the proposed activities (see Figure 2 for illustration of the farm portions).

Farm Name	Ptn No	21 Digit Code
Stilfontein 408 IP	2	TOIP0000000004080002
Stilfontein 408 IP	9	TOIP0000000004080009
Stilfontein 408 IP	RE 11	TOIP0000000004080011
Stilfontein 408 IP	RE 15	TOIP0000000004080015
Stilfontein 408 IP	17	TOIP0000000004080017
Stilfontein 408 IP	RE 21	TOIP0000000004080002
Stilfontein 408 IP	RE 23	TOIP0000000004080021
Stilfontein 408 IP	RE 26	TOIP0000000004080026
Stilfontein 408 IP	RE 31	TOIP0000000004080031
Stilfontein 408 IP	RE 36	TOIP0000000004080036
Stilfontein 408 IP	RE 48	TOIP0000000004080048
Stilfontein 408 IP	RE 49	TOIP0000000004080049
Stilfontein 408 IP	RE 61	TOIP0000000004080061
Stilfontein 408 IP	RE 64	TOIP0000000004080064
Stilfontein 408 IP	RE 66	TOIP0000000004080066
Stilfontein 408 IP	RE 67	TOIP0000000004080067
Stilfontein 408 IP	RE 70	TOIP0000000004080070
Stilfontein 408 IP	RE 99	TOIP0000000004080099
Stilfontein 408 IP	RE 105	TOIP00000000040800105
Stilfontein 408 IP	RE 106	TOIP00000000040800106
Stilfontein 408 IP	RE 107	TOIP00000000040800107
Stilfontein 408 IP	108	TOIP00000000040800108
Stilfontein 408 IP	116	TOIP00000000040800116
Stilfontein 408 IP	RE 122	TOIP00000000040800122
Stilfontein 408 IP	125	TOIP00000000040800125
Stilfontein 408 IP	128	TOIP00000000040800128
Stilfontein 408 IP	140	TOIP00000000040800140
Stilfontein 408 IP	155	TOIP00000000040800155
Stilfontein 408 IP	156	TOIP00000000040800156
Stilfontein 408 IP	157	TOIP00000000040800157
Stilfontein 408 IP	158	TOIP00000000040800158
Stilfontein 408 IP	159	TOIP00000000040800159
Stilfontein 408 IP	160	TOIP00000000040800160
Stilfontein 408 IP	161	TOIP00000000040800161
Stilfontein 408 IP	162	TOIP00000000040800162
Stilfontein 408 IP	190	TOIP00000000040800190
Stilfontein 408 IP	191	TOIP00000000040800191
Witstinkhoutbaken 409 IP	RE 0	TOIP0000000004090000
Witstinkhoutbaken 409 IP	RE 1	TOIP0000000004090001
Witstinkhoutbaken 409 IP	2	TOIP0000000004090002
Witstinkhoutbaken 409 IP	3	TOIP0000000004090003
Hartebeestfontein 422 IP	RE 3	TOIP0000000004220003
Hartebeestfontein 422 IP	14	TOIP0000000004220014
Hartebeestfontein 422 IP	21	TOIP0000000004220021
Hartebeestfontein 422 IP	RE 24	TOIP0000000004220024
Hartebeestfontein 422 IP	73	TOIP0000000004220073
Stilfontein Industrial Park		
Stilfontein Ext 12		

c) LOCALITY MAP

(Show nearest town, scale not smaller than 1:250000).

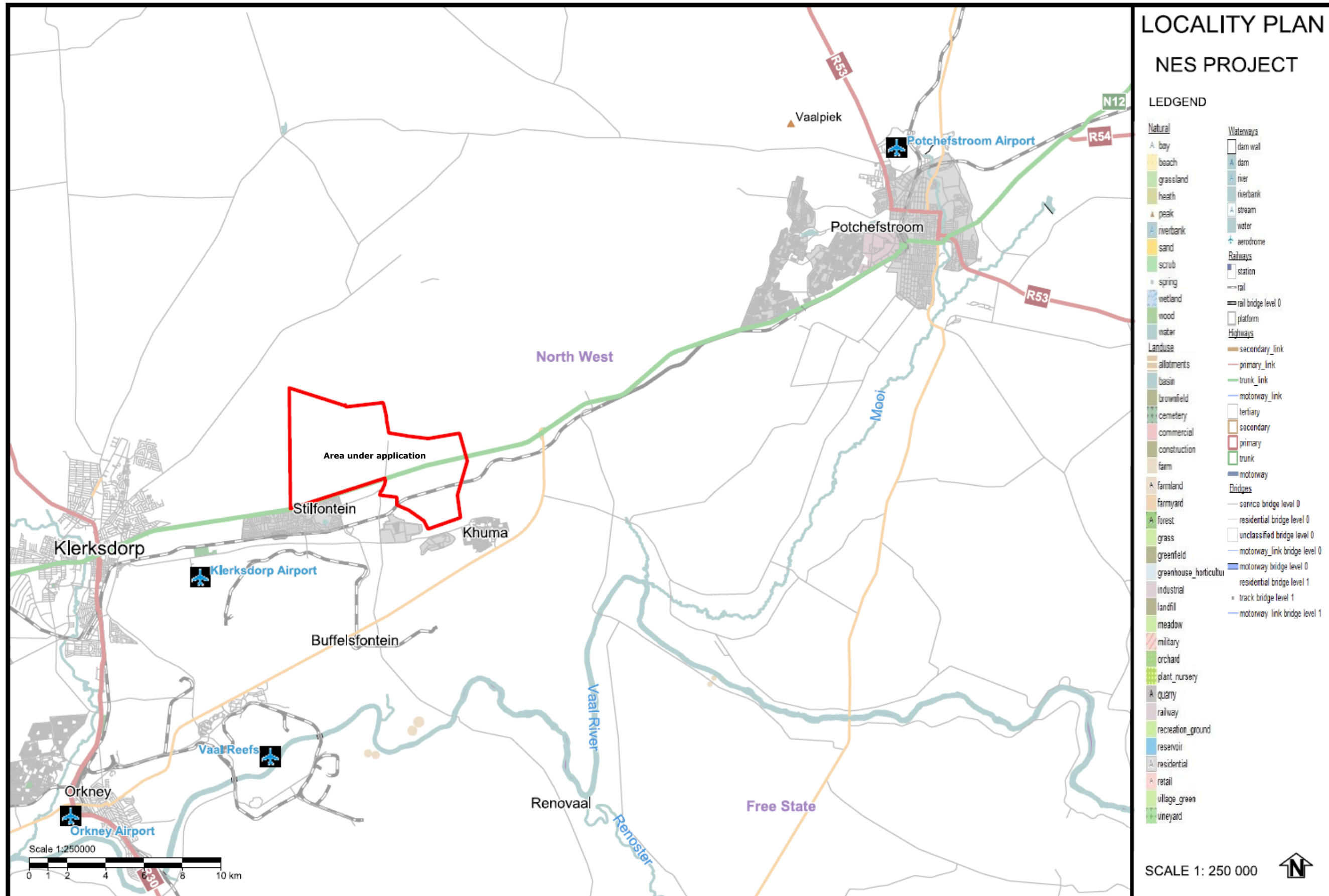
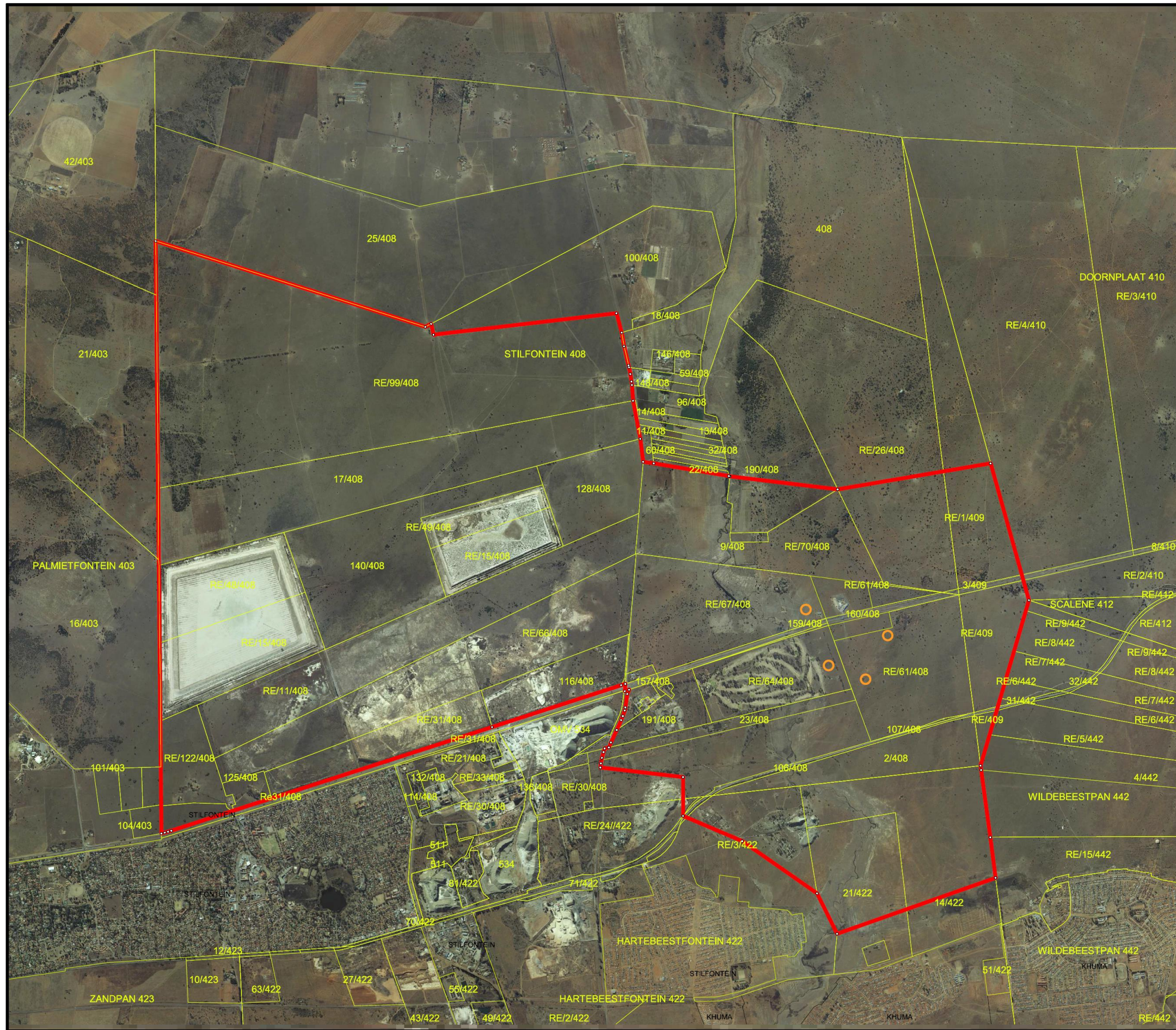


Figure 1: Locality Map.

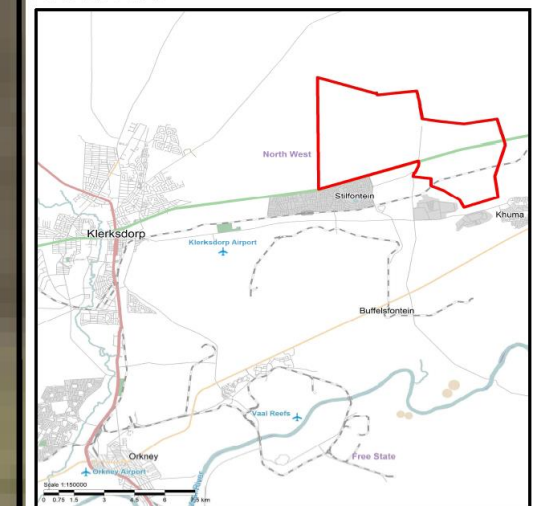


NES PROJECT

Farm Name	Ptn No	21 Digit Code
Stilfontein 408 IP	2	TOIP0000000040800002
Stilfontein 408 IP	9	TOIP0000000040800009
Stilfontein 408 IP	RE 11	TOIP0000000040800011
Stilfontein 408 IP	RE 15	TOIP0000000040800015
Stilfontein 408 IP	RE 17	TOIP0000000040800017
Stilfontein 408 IP	RE 21	TOIP0000000040800021
Stilfontein 408 IP	RE 23	TOIP0000000040800023
Stilfontein 408 IP	RE 26	TOIP0000000040800026
Stilfontein 408 IP	RE 31	TOIP0000000040800031
Stilfontein 408 IP	RE 36	TOIP0000000040800036
Stilfontein 408 IP	RE 48	TOIP0000000040800048
Stilfontein 408 IP	RE 49	TOIP0000000040800049
Stilfontein 408 IP	RE 61	TOIP0000000040800061
Stilfontein 408 IP	RE 64	TOIP0000000040800064
Stilfontein 408 IP	RE 66	TOIP0000000040800066
Stilfontein 408 IP	RE 67	TOIP0000000040800067
Stilfontein 408 IP	RE 70	TOIP0000000040800070
Stilfontein 408 IP	RE 99	TOIP0000000040800099
Stilfontein 408 IP	RE 105	TOIP0000000040800105
Stilfontein 408 IP	RE 106	TOIP0000000040800106
Stilfontein 408 IP	RE 107	TOIP0000000040800107
Stilfontein 408 IP	108	TOIP0000000040800108
Stilfontein 408 IP	116	TOIP0000000040800116
Stilfontein 408 IP	RE 122	TOIP0000000040800122
Stilfontein 408 IP	125	TOIP0000000040800125
Stilfontein 408 IP	128	TOIP0000000040800128
Stilfontein 408 IP	140	TOIP0000000040800140
Stilfontein 408 IP	155	TOIP0000000040800155
Stilfontein 408 IP	156	TOIP0000000040800156
Stilfontein 408 IP	157	TOIP0000000040800157
Stilfontein 408 IP	158	TOIP0000000040800158
Stilfontein 408 IP	159	TOIP0000000040800159
Stilfontein 408 IP	160	TOIP0000000040800160
Stilfontein 408 IP	161	TOIP0000000040800161
Stilfontein 408 IP	162	TOIP0000000040800162
Stilfontein 408 IP	190	TOIP0000000040800190
Stilfontein 408 IP	191	TOIP0000000040800191
Witstinkhoutbaken 409 IP	RE 0	TOIP0000000040900000
Witstinkhoutbaken 409 IP	RE 1	TOIP0000000040900001
Witstinkhoutbaken 409 IP	2	TOIP0000000040900002
Witstinkhoutbaken 409 IP	3	TOIP0000000040900003
Hartebestfontein 422 IP	RE 3	TOIP0000000042200003
Hartebestfontein 422 IP	14	TOIP0000000042200014
Hartebestfontein 422 IP	21	TOIP0000000042200021
Hartebestfontein 422 IP	RE 24	TOIP0000000042200024
Hartebestfontein 422 IP	73	TOIP0000000042200073
Stilfontein Industrial Park		
Stilfontein Ext 12		

- PROSPECTING AREA
- PROPERTY BOUNDARIES
- TARGETED BOREHOLES

LOCALITY MAP



NOT TO SCALE

SCALE 1: 20 000

Figure 2: Satellite image (Google Earth) of the proposed extent of the prospecting right area showing the various farm portions.

d) DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY

(i) Listed and specified activities

NAME OF ACTIVITY	AERIAL EXTENT	LISTED ACTIVITY	LISTING NOTICE
(E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc	Ha or m ²	(Mark with an X where applicable or affected).	GNR 983, GNR 984, GNR 985 (as amended)
Prospecting Right Application in terms of Section 16 and Regulation 7(1) of the MPRDA	4046 Ha	X	GNR 983: Activity 20
Non-invasive Preparation			
<ul style="list-style-type: none"> Literature review and desktop studies Analysis of results from historical boreholes Determining final location of initial drill sites (x 4) 	4046 Ha	X	GNR 983: Activity 20
Initial Drilling (4 holes)			
<p>The drilling activities proposed include;</p> <ul style="list-style-type: none"> Access track to drill sites (due to the fact that the area is built up, there are available access tracks which can be used. An additional 200m of access roads (less than 4m wide) may be required depending on final site locations). Demarcation of drill pad (20m x 20m) per drill site. Implement percussion drilling followed by diamond drilling Temporary stores / ablution / diesel bowser / security required for drilling (all within the demarcated area). Core to be taken to an offsite core shed for cutting and processing Sampling of the core to be performed at a recognised laboratory Established accommodation nearby in the area to be used for employees/contractors (no camp site) Water to be obtained from an existing legal source and used for both drilling and potable requirements. Minor waste requirements Sanitation requirements (chemical toilets to be provided) 	< 1 Ha	X	GNR 983: Activity 20
Concurrent rehabilitation			
<ul style="list-style-type: none"> Remove all temporary infrastructure required for drilling activities Scarify drill pad area / vegetate if necessary 	< 1 Ha	-	-
Infill drilling (~ 20 holes)			
<p>Same description as for initial drilling.</p> <p>Area 1 – 14 holes Area 2 – 4 holes Area 3 – 2 holes</p>	~1 Ha	X	GNR 983: Activity 20 & 27
Documentation			
<ul style="list-style-type: none"> Resource statement Prefeasibility study / Specialist studies Bankable feasibility study Preparation for Mining Authorisation 	4046 Ha	X	GNR 983: Activity 20

Figure 3 below provides a visual indication of the preliminary location of the initial 4 boreholes to be drilled and the target areas for the infill drilling programme. Figure 4 to Figure 6 provides an isolated indication of the target areas (Areas 1, 2 & 3) for the infill drilling programme.

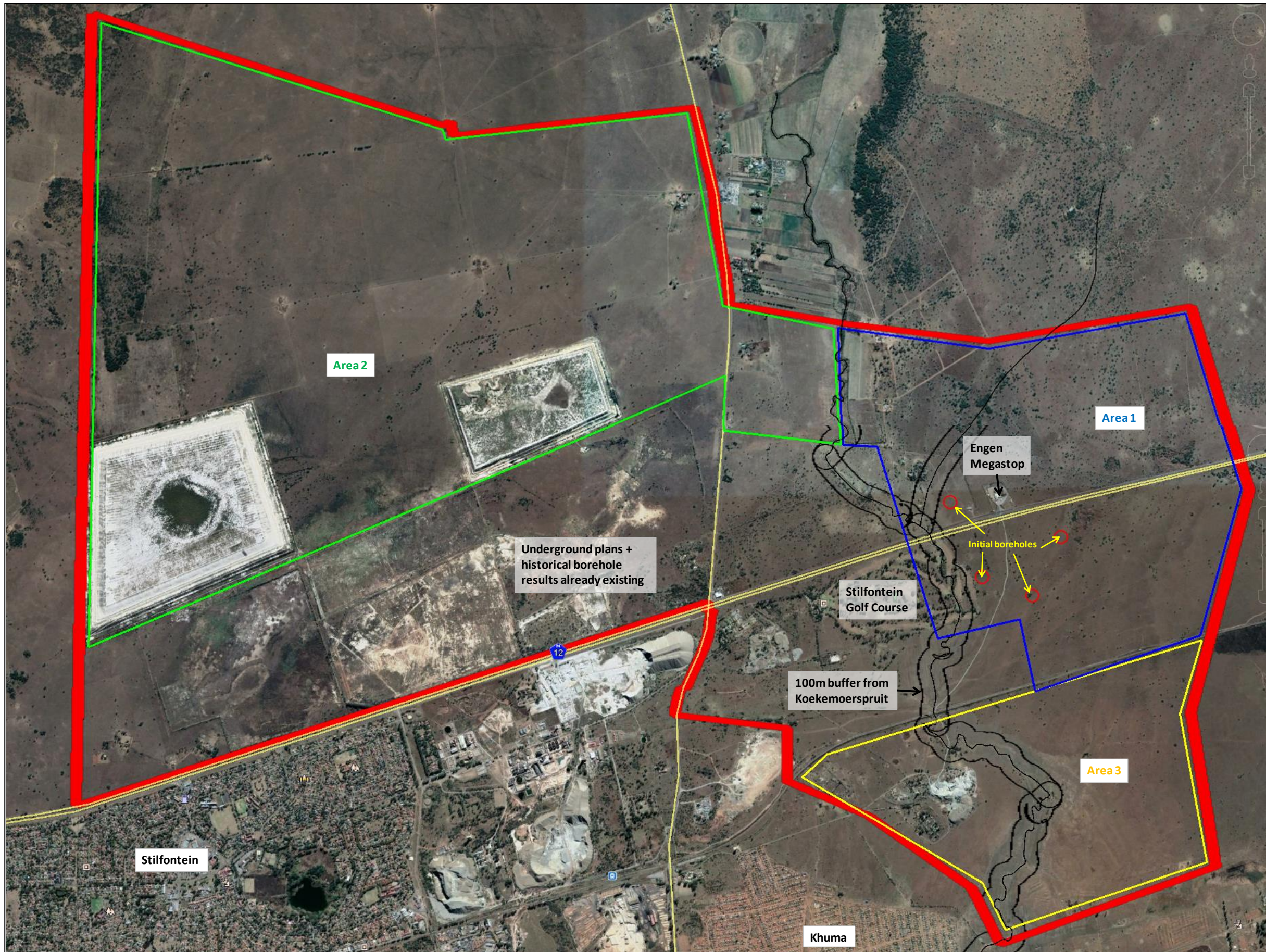


Figure 3: Satellite image (Google Earth) of the various target areas associated with the prospecting right application area.

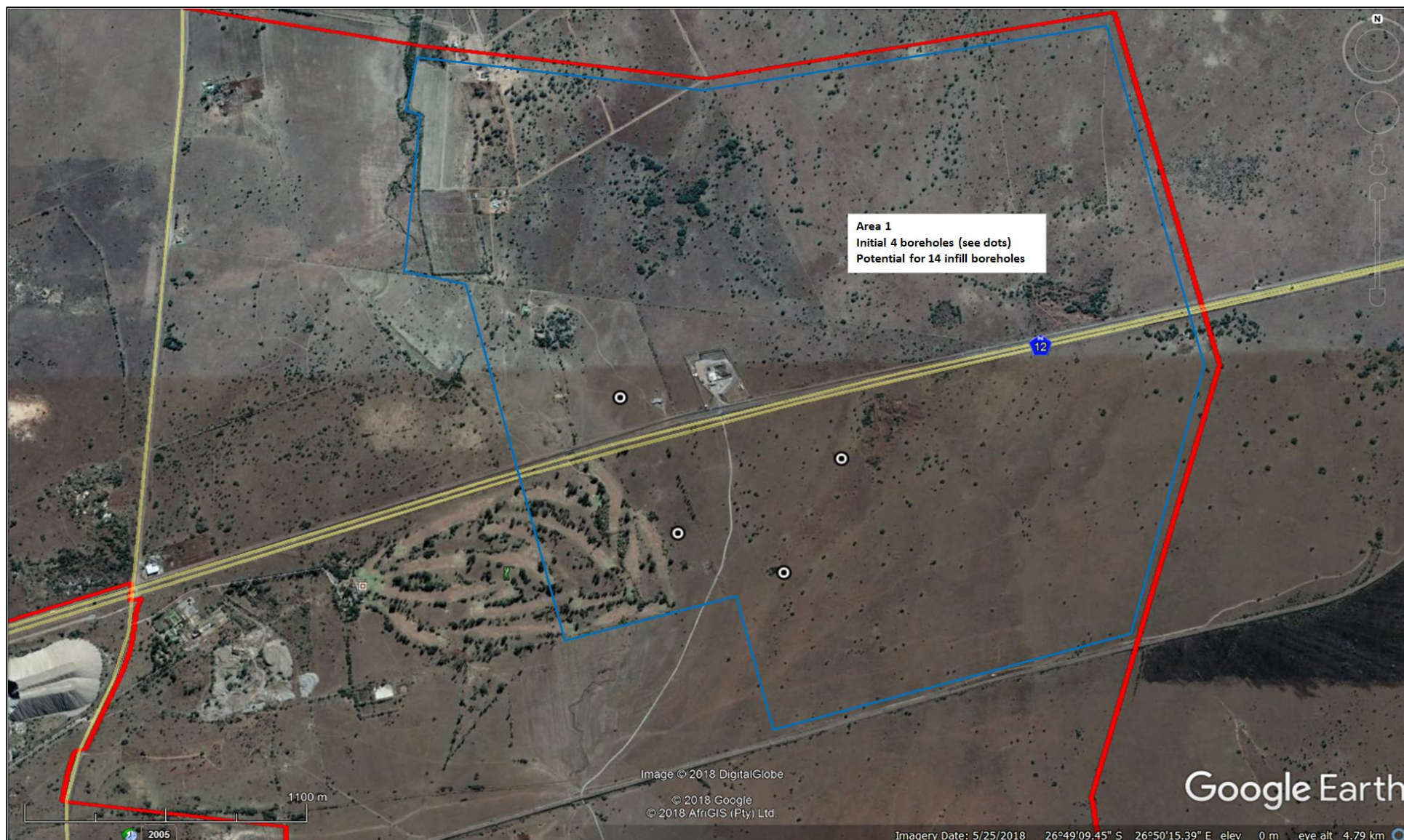


Figure 4: Satellite image (Google Earth) of target area 1 where the initial 4 boreholes are to be drilled and if positive a further 14 infill drilling holes may be required.

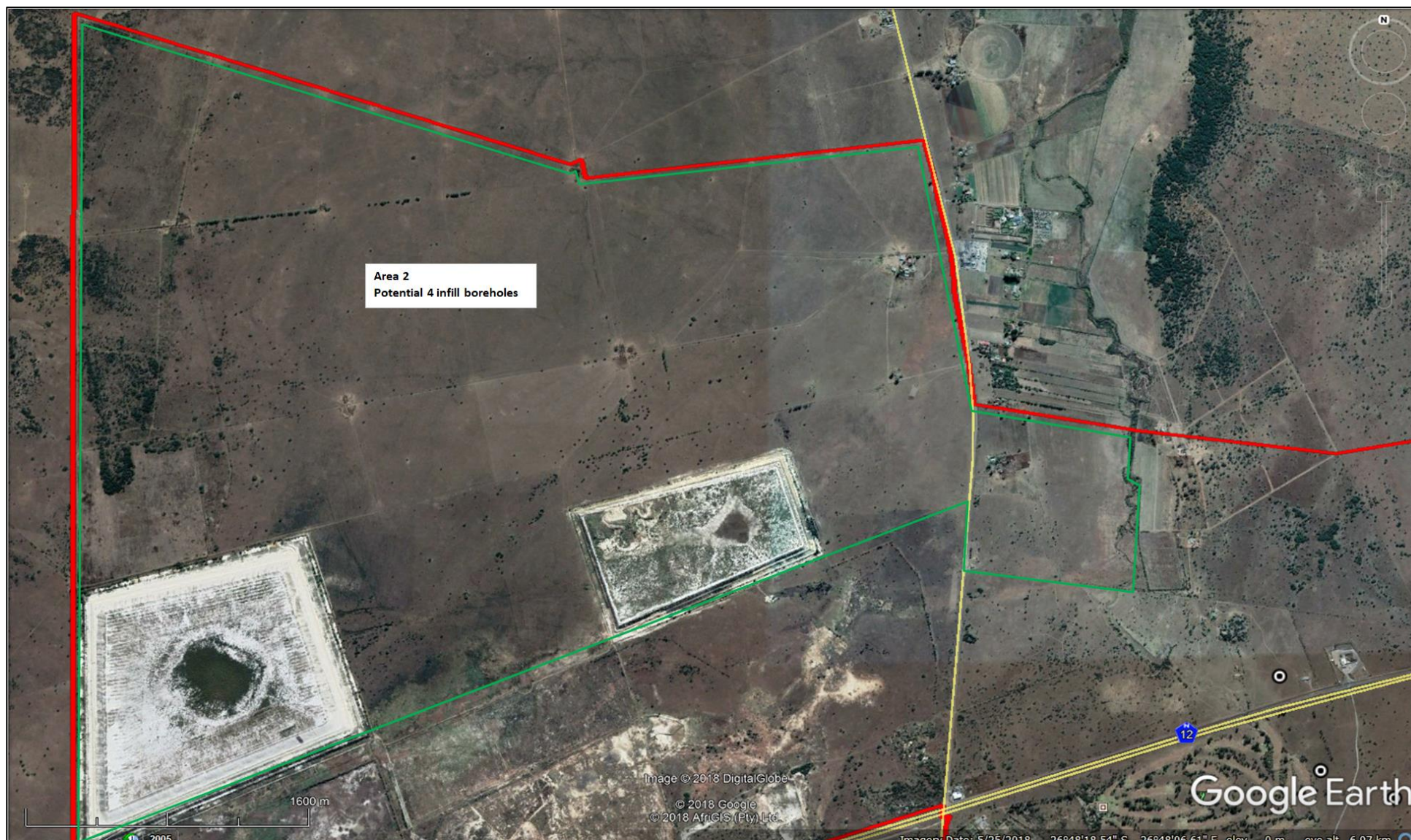


Figure 5: Satellite image (Google Earth) of target area 2 where 4 infill drilling holes may be required.

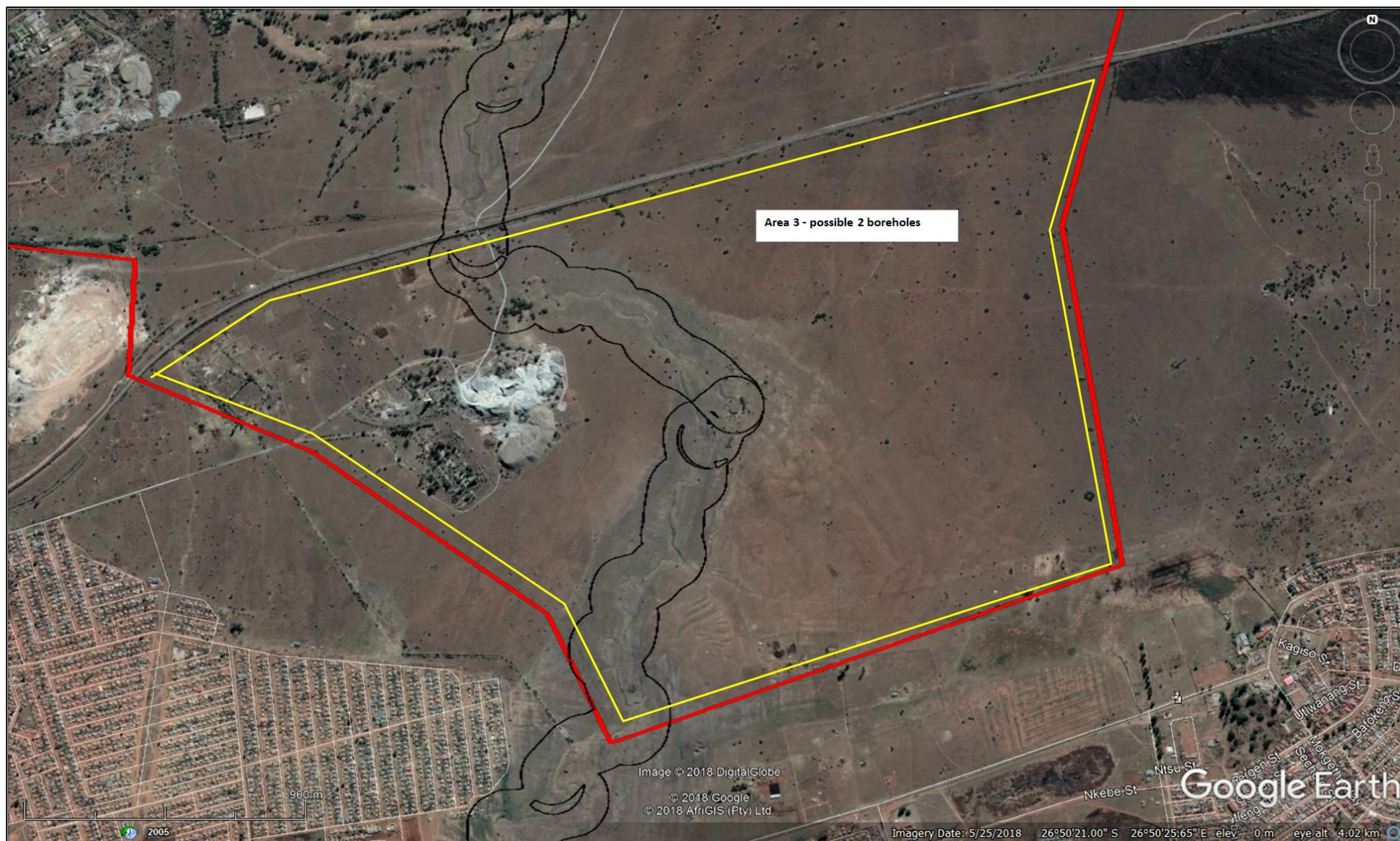


Figure 6: Satellite image (Google Earth) of target area 3 where 2 infill drilling holes may be required.

(i) Description of the activities to be undertaken

(Describe methodology or technology to be employed, including the type of commodity to be mined and for a linear activity, a description of the route of the activity).

The overall goal of the prospecting activities are to investigate the economic viability of gold silver and other precious metals throughout the prospecting area under application. This will be achieved through implementing phase 1 – 4 as described below.

Phase 1 (non invasive): The initial prospecting activities will involve desktop studies to gather all historical mineral and other information concerning the prospecting area and consolidating it to aid the finalisation of the positions of the initial and infill drilling campaign (in consultation with the relevant landowner). Based on current knowledge of the applicant, preliminary locations of the target areas for the initial 4 boreholes to be drilled have been identified (as shown in Figure 3). Analysis of information collected will take place throughout the duration of the prospecting campaign. Within 3 months of obtaining the prospecting right, the applicant intends to be in a position to move onto Phase 2.

Phase 2 & 3 (invasive): These phases will initially involve the drilling of 4 boreholes and analysing the core associated with these holes. The future prospecting programme is dependent on the outcome of the initial 4 boreholes. Nine months have been allocated to Phase 2, however it is intended that drilling should be completed within a much shorter period.

If the initial holes reveal no viable prospects for an economic resource, invasive prospecting in this area will cease and the remaining prospecting campaign will be abandoned. If the initial holes indicate a possible mineral resource, then prospecting activities will proceed onto the infill drilling phase which could involve up to 20 holes being drilled within 3 different demarcated areas (14 holes in Area 1, 4 holes in Area 2 and 2 holes in Area 3) as illustrated in Figure 3 to Figure 6. There is a large section of the prospecting area where no drilling is required due to the fact that these areas have already been mined and there is extensive information available about the areas in the underground plans. Three years has been allocated to phase 3 of which potentially a limited time will involve drilling.

When drilling is undertaken, the following generic procedure will be followed:

- The final drill position will be confirmed between a geologist and the landowner. The drill position will adhere to the buffer restrictions contained within the implementation plan (Appendix B2) such as (100m from a river or known water course, 50m from any sensitive infrastructure, 50m from any known heritage site, etc). The drill position will be positioned as close to existing access tracks as possible.
- Photographs will be taken of the identified access route and drill pad area prior to any physical impact.
- An area of approximately 20 x 20m will be scraped, levelled and demarcated with a temporary fence. Any topsoil removed will be stored adjacent to the drill site
- Two sumps will be dug and lined with plastic
- A temporary storage area will be demarcated within the drill pad location
- Percussion drilling will be implemented
- Diamond drilling will be implemented
- Core will be taken to the a dedicated core shed for cutting and processing
- Samples will be sent to an approved laboratory for analysis
- Once drilling is completed, all equipment will be removed. The plastic lining taken out of the sump and the sump refilled. The borehole will be capped at least 0.5 m below the ground and covered. The area will be covered with any soil removed. Photographs will be taken of the rehabilitated sites
- Landowner acceptance of the rehabilitation will be obtained.

Photographs 1 and 2 below provide a visual indication of a typical drill site.

Phase 4 (non-invasive): If both phases 2 and 3 above are positive, the information gained from the drilling campaign would be used to support the development of resource statements and pre-feasibility / feasibility studies for mining. These studies may involve the commissioning of various specialist who depending on the study, may require access to land to complete their studies. Potential opportunity for future mining is envisaged to be subsurface only (no surface or opencast mining) therefore existing shafts

in the area would need to be inspected and assessed. All the information gained during this phase would be used to compile a mining right application.



Photograph 1: Indication of a typical drill pad area with a drill rig.



Photograph 2: Indication of the sumps required for a typical drilling operation.

e) POLICY AND LEGISLATIVE CONTEXT

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THE DEVELOPMENT AND RESPOND THE COMPLY
Legislation		
<p>Constitution of the Republic of South Africa, 1996 Everyone has the right:</p> <ol style="list-style-type: none"> 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 <ol style="list-style-type: none"> i. prevent pollution and ecological degradation; ii. promote conservation; and iii. secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social 		<p>This basic environmental right contained in the bill of rights is preserved throughout the environmental legislation. The particulars regarding the impact assessment process is described in Section (h)(v) – (viii) and Section (i)(i) – (v) of this report. To give effect to Section 24 of the Constitution, an application for environmental authorisation is being made in terms of reasonable legislative and other measures.</p>
<p>Minerals and Petroleum Development Resources Act, Act 28 of 2002 (MPRDA) and the MPRDA Amendment Act, Act 49 of 2008. The MPRDA makes provision for equitable access to and sustainable development of the nation's mineral and petroleum resources. The recent amendment MPRDA resulted in changes to align specific environmental legislation associated with mining activities and aligned sections of NEMA and MPRDA to provide for one environmental management system.</p> <ul style="list-style-type: none"> • The application is undertaken in line with Section 16 of the MPRDA • The DMR is the competent authority overseeing the environmental authorisation process. 		<p>This application is for a prospecting right</p>
<p>National Environmental Management Act, Act 107 of 1998 (as amended)(NEMA) The principles set out in Section 2 of NEMA guide the environmental requirements of the application. Principles. (1) The principles set out in this section apply throughout the Republic to the actions of all organs of state that may significantly affect the environment and—</p> <ol style="list-style-type: none"> a. shall apply alongside all other appropriate and relevant considerations, including the State's responsibility to respect, protect, promote and fulfil the social and economic rights in Chapter 2 of the Constitution and in particular the basic needs of categories of persons disadvantaged by unfair discrimination; b. serve as the general framework within which environmental management and implementation plans must be formulated; c. serve as guidelines by reference to which any organ of state must exercise any function when taking any decision in terms of this Act or any statutory provision concerning the protection of the environment; d. serve as principles by reference to which a conciliator appointed under this Act must make recommendations; and e. guide the interpretation, administration and implementation of this Act, and any other law concerned with the protection or management of the 		<p>The principles of NEMA have been considered throughout the report</p>

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THE DEVELOPMENT AND RESPOND THE COMPLY
<p>environment.</p> <p>(2) Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.</p> <p>(3) Development must be socially, environmentally and economically sustainable.</p> <p>(4) (a) Sustainable development requires the consideration of all relevant factors including the following:</p> <ul style="list-style-type: none"> i. That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied; ii. that pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied; iii. that the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied; iv. that waste is avoided, or where it cannot be altogether avoided, minimised and reused or recycled where possible and otherwise disposed of in a responsible manner; v. that the use and exploitation of nonrenewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the resource; vi. that the development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised; vii. that a risk averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions; and viii. that negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied. <p>(b) Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option.</p> <p>(c) Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons.</p> <p>(d) Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination.</p> <p>(e) Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.</p> <p>(f) The participation of all interested and affected parties in environmental governance must be promoted, and all people</p>		

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THE DEVELOPMENT AND RESPOND THE COMPLY
<p>must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured.</p> <p>(g) Decisions must take into account the interests, needs and values of all interested and affected parties, and this includes recognising all forms of knowledge, including traditional and ordinary knowledge.</p> <p>(h) Community wellbeing and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.</p> <p>(i) The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment.</p> <p>(j) The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected.</p> <p>(k) Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law.</p> <p>(l) There must be intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment.</p> <p>(m) Actual or potential conflicts of interest between organs of state should be resolved through conflict resolution procedures.</p> <p>(n) Global and international responsibilities relating to the environment must be discharged in the national interest.</p> <p>(o) The environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage.</p> <p>(p) The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.</p> <p>(q) The vital role of women and youth in environmental management and development must be recognised and their full participation therein must be promoted.</p> <p>(r) Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.</p> <p>Section 28 of NEMA imposes a duty on any person who causes, has caused or may cause significant pollution or degradation to take reasonable measures to prevent, minimise and rectify significant pollution and environmental degradation. Non-compliance with the duty of care allows a competent authority to require that specified measures be taken (and if not taken, the competent authority may take those steps itself and recover the costs from various parties). Liability is retrospective.</p>		
<p>EIA Regulations 2014, GNR 982-985 in terms of NEMA. Environmental Impact Assessment Regulations, GN R 982</p>	<p>A Basic Assessment process is being followed due to the identified Listed</p>	

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THE DEVELOPMENT AND RESPOND COMPLY
<p>of 4 December 2014 (as amended). These regulations set out the process required to undertake the scoping and EIA process including the public participation process that must be undertaken as part of the EIA.</p>		<p>Activities triggered by the application in terms of the EIA Regulations (2014)</p>
<p>National Water Act, Act 36 of 1998 (NWA): The NWA provides for fundamental reform of the law relating to water resources, where the ultimate aim of water resource management is to achieve the sustainable use of water for the benefit of all users. Specific water use of concern includes disposing of waste in a manner which may detrimentally impact on a water resource.</p> <p>The purpose of this Act is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in ways which take into account -</p> <ul style="list-style-type: none"> (i) meeting the basic human needs of present and future generations; (ii) promoting equitable access to water; (iii) redressing the results of past racial and gender discrimination; (iv) promoting the efficient, sustainable and beneficial use of water in the public interest; (v) facilitating social and economic development; (vi) providing for growing demand for water use; (vii) protecting aquatic and associated ecosystems and their biological diversity; (viii) reducing and preventing pollution and degradation of water resources; (ix) meeting international obligations; (x) promoting dam safety; (xi) managing floods and droughts, and (xii) for achieving this purpose, to establish suitable institutions and to ensure that they have appropriate community, racial and gender representation. 		<p>The requirement of a water use license has not been identified for the activities covered under this application. The principles of the NWA will be applied to all physical activities implemented as part of ongoing drilling.</p>
<p>Regulation 704 (GN704) (Government Gazette 20118, 4 June 1999) was drawn up to address these issues in relation to mining activities. Compliance to the requirements of GN704 is a legal requirement for all mining operations.</p>		<p>The requirements of GN 704 have been considered. No drilling activities will take place within 100m of a recognised water course or wetland. No new access tracks will be created which cross a water course.</p>
<p>National Environmental Management: Waste Act, Act 59 of 2008 (NEM:WA) The Act was established to regulate waste management for the protection of human health and the environment by providing reasonable measures for:</p> <ul style="list-style-type: none"> • Minimising the consumption of natural resources • Avoiding and minimising the generation of waste • Reducing, reusing, recycling and recovering waste • Treating and safely disposing of waste as a last resort • Prevention pollution and ecological degradation • Securing ecologically sustainable development while promoting justifiable economic and social development; • Promoting and ensuring the effective delivery of waste services; • Remediating land where contamination presents, or may present, a significant risk of harm to health or the environment. • Achieving integrated waste management reporting and planning 		<p>The requirement of a waste license has not been identified for the activities covered by this application. The principles of the NWA will be applied to all aspects of the activities covered by this application.</p>

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THE DEVELOPMENT AND RESPOND THE COMPLY
<p>National Environmental Management: Air Quality Act, Act 39 of 2004 (NEM:AQA) NEM:AQA has placed the responsibility for air quality management on local authorities that will be tasked with baseline characterisation, management and operation of ambient monitoring networks, licensing of listed activities, and emissions reduction strategies. GN893 of 2013 provides the list of activities in terms of Section 21(1)(a) for which licensing is required in terms of Chapter 5 of the Act. This notice further establishes minimum emission standards for the listed activities.</p>		<p>The principles of the NEM:AQA will be applied to the future activities covered by this application.</p>
<p>National Heritage Resources Act, 25 of 1999 (“NHRA”) NHRA serves to protect and manage South African heritage and cultural resources, which include places, buildings, structures and equipment of cultural significance, historical settlements and townscapes, archaeological and paleontological sites, graves and burial grounds.</p> <p>The Act protects any heritage resources from damage by developments by stipulating in Section 38 that any person intending on undertaking any form of development which involves the activities listed below must, at the earliest stage of initiation, notify the South African Heritage Resources Association (SAHRA):</p> <p>A. the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length; B. the construction of a bridge or similar structure exceeding 50 m in length; C. any development or other activity which will change the character of a site— i. exceeding 5 000 m² in extent; or ii. involving three or more existing erven or subdivisions thereof; or iii. involving three or more erven or divisions thereof which have been consolidated within the past five years; or iv. the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority; D. the re-zoning of a site exceeding 10 000 m² in extent; or E. any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority.</p>		<p>All activities covered by this application will avoid any identified heritage resource.</p>
<p>The National Environmental Management: Biodiversity Act, 2004 (NEM:BA) NEM:BA is to provide for the management and conservation of South Africa's biodiversity within the framework of the NEMA. This includes: the protection of species and ecosystems; the sustainable use of indigenous biological resources; the fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources; and the establishment of a South African National Biodiversity Institute (SANBI).</p> <p>Section 52 of the Act provides for listing of threatened or protected ecosystems, in one of four categories: Critically Endangered (CR), Endangered (EN), Vulnerable (VU) or Protected. The main purpose of listing threatened ecosystems is to reduce the rate of ecosystem and species extinction and includes the prevention of further degradation and loss of structure, function and composition of threatened</p>		<p>The South African National Biodiversity Institutes BGIS LUDS has been consulted when determining the baseline environmental conditions for the areas impacted by proposed surface activities. The National Environmental Screening Tool was also consulted.</p>

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THE DEVELOPMENT AND RESPOND THE COMPLY
ecosystems. Threatened terrestrial ecosystems have been delineated based on the South African Vegetation Map, national forest types and priority areas identified in a provincial systematic biodiversity plan, in this case the Gauteng Conservation Plan (C-Plan).		
Guidelines		
Guideline on Need and Desirability in terms of the EIA Regulations. Integrated environmental management guideline series 9.		Considered when completing the sections on need and desirability.
South African National Biodiversity Institutes BGIS Used to determine sensitive environmental features of the areas where surface impacts will take place.		Considered when completing the baseline environmental conditions.
National Environmental Screening Tool		Considered when completing the baseline environmental conditions.
Integrated Development Plan of the City of Matlosana		Considered when completing the socio economic baseline environmental conditions.
SANS 10103:2008 The Measurement and Rating of Environmental Noise with Respect to Land Use, Health, Annoyance and to Speech Communication		Considered when proposing appropriate mitigation targets.
SANS 1929:2005 Edition 1.1 – Ambient Air Quality Limits for Common Pollutants; <ul style="list-style-type: none"> • SANS 1929:2005: Ambient Air Quality – Limits for common pollutants; • SANS 1929:2011: Ambient Air Quality – Limits for common pollutants and • SANS D113:2012: Standard Test Method for Collection and Measurement of Dust fall (Settleable Particulate Matter). 		Considered when proposing appropriate mitigation targets.

f) NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES

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

Prospecting activities are needed to:

- A) Confirm the historical information and obtain additional information concerning the potential resource through additional invasive prospecting methods.
- B) Confirm if the resource can be extracted through future mining in an environmentally, socially and economically viable manner.

Should prospecting activities prove that there are economically viable minerals available to allow for mining, a new mine may be developed which would have the potential to contribute to the national economy and generate employment opportunities in an area where employment is desperately required and there is an abundance of suitably qualified and experienced job seekers.

g) MOTIVATION FOR THE PREFERRED SITE, ACTIVITIES AND TECHNOLOGY ALTERNATIVE

Preferred site: The area applied for includes areas associated with the defunct Stilfontein Gold Mine and areas to the east of historically mined out areas.

Brief history of the defunct Stilfontein Gold Mining Co Ltd: The first borehole (ST 1) was drilled during 1947 which intersected Ventersdorp Contact Reef (VCR) at a depth of 437 meters below surface with a gold grade of 9.94g/t over 51cm = 507cm.g/t. A Mining Lease was granted to Stilfontein GM over an area of approximately 3105 hectares in extent to the west of the proposed application area. The Charles and Margaret shafts were sunk during 1949 and the first gold production commenced during 1952. The Vaal Reef was the major reef mined with a secondary contribution coming from the VCR in the latter years. Stilfontein GM was mined for a total of 39 years producing 690 tons of gold, generating total

revenue of R 345 billion, calculated at today's gold price. The recovered grade varied between 7 and 15 g/t.

Gold Bearing Reefs of interest for this prospecting application: The **Black Reef** occurs at the base of the Malmani dolomites and underlies the entire old Stilfontein G M lease area. The Black reef also underlies the whole of the proposed Prospecting Right area. The area east of the Vaal Reef sub outcrop will be of main interest for this prospecting application. In the past in the Klerksdorp area it was mined on a noticeable scale at Ariston and Machavie, but also at 100 other small operations in the early 1900's.

The **Ventersdorp Contact Reef** (VCR) occurs at the base of the Ventersdorp lavas and underlies 65% of the old Stilfontein G M lease area. All, but with the exception of about 30% of the proposed Prospecting area in the east, is also underlain by the VCR. The VCR was mined extensively in the latter years on the Stilfontein G M Lease area with approximately 2 Mt at a grade of 3.9 g/t of probable reserves still remaining unmined; in this prospecting application this will be the secondary target. The VCR was the main reef mined at Western Reefs and currently at Tau Lekoa.

The **Vaal Reef** was the primary reef mined on the old Stilfontein G M lease area, underlying 80% of the lease. Sub outcropping against the VCR in the north and against the Black Reef in the east. Structurally it is very complex, but with a possible 90% extraction rate. Average recovery grade varying between 7 and 15 g/t. The best values were found in the north east.

The preferred location of the prospecting area chosen is based on the known regional geology. The proposed location of the initial boreholes specifically targets the possibility of intersecting the Black Reef to the east of the Vaal reef sub outcrop.

Activities: The prospecting programme as described in Section D of this report is the only alternative considered to determine the potential unmined resource within the prospecting area covered by this application.

Technological Alternative: Implementing a drilling and sampling campaign are considered by industry to be the most effective technology for this particular project to determine a viable resource and therefore no alternatives are considered.

h) FULL DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PREFERRED ALTERNATIVES WITHIN THE SITE

NB!! – This section is about the determination of the specific site layout and the location of infrastructure and activities on site, having taken into consideration the issues raised by interested and affected parties, and the consideration of alternatives to the initially proposed site layout.

(i) Details of the development footprint alternatives considered

With reference to the site plan provided as Appendix A2:, and the location of the individual activities on site, provide details of the alternatives considered with respect to:

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

The properties making up the area covered by this application have been selected on historical knowledge of the defunct Stilfontein Gold mine and the possibility of unmined economically viable Black reef. The proposed location of the initial boreholes specifically targets the possibility of intersecting the Black Reef to the east of the Vaal reef sub outcrop.

Three areas have been identified for an infill drilling campaign. The final positioning of infill drill sites within these 3 areas will only be determined after initial drilling has been completed, historical geological records have been assessed and further consultation with the affected landowners.

In addition, a number of restrictions will apply to the physical impact from drilling activities, namely;

- No drilling will take place within 100m of a water course
- No physical drilling will take place within 50m of any infrastructure
- Where possible only existing roads will be used to access any drill site
- All identified heritage sites will avoided by more than 50m

(b) *The type of activity to be undertaken*

No alternatives to non invasive investigations, implementing a drilling and sampling campaign followed by and further specialist studies have been considered.

(c) *The design or layout of the activity*

When implementing drilling, each drill site will require an area of approximately 20 x 20m for the duration of the drilling activities. All of the drilling activities will be contained within the 20 x 20m demarcated area. There are no alternative design or layout options for the implementation of a drilling programme. See photo's 1 and 2 for an indication of the activities that will occur within the demarcated area's.

(d) *The technology to be used in the activity*

Implementing a drilling and sampling campaign are considered by industry to be the most effective technology for this particular project to determine a viable resource and therefore no alternatives are considered.

(e) *The operational aspects of the activity*

Alternative operational aspects could include;

- The timing and duration of implementing the drilling programme is not set. If necessary certain drill sites can be timed to take place when it is more convenient or less impactful.
- The time of implementing drilling activities during the course of the day. Ideally drill activities will occur continuously until such time the hole is completed. If necessary certain holes can be drilled for a 12 hour day and no drilling occurring during the night.

These alternative operational aspects will be considered and finalised after receiving I&AP input from the consultation process.

(f) *The option of not implementing the activity*

Prospecting, including drilling activities in this case, is required in order to generate a SAMREC compliant mineral resource. There is no potential for any future investment in a potential mine without the confirmation of the mineral resources, which can only be obtained from prospecting / exploration activities.

Should the prospecting right be refused, effectively a potential gold and silver (and other precious metals) resource will be sterilised.

(ii) *Details of the public participation process followed*

This section describes the proposed process to be implemented to identify and consult with interested and affected parties and will be updated with specific detail of the process that was actually achieved. Details of the documentation provided and evidence of implementation of the consultation process will be presented in the Appendices of the final document.

Electronic communication will be favoured as the primary form of communication as it is a faster means of communication considering the limited time frames that the application process allows.

Notification of I&APs:

1. I&APs will be identified and where possible e-mail addresses obtained (or postal addresses).
2. Notification letters will be sent via e-mail (or registered mail if specifically requested) [written notification as per Regulation 41(2)(b)] and a Background Information Document (BID) will be sent by e-mail. I&AP will be requested to confirm if they wish to be involved in the process.
3. Site notices will be erected at suitable locations close to the proposed prospecting application site which will be utilised [as per Regulation 41(2)(a)] and include the details described in Regulation 41(3) and comply with the details described in Regulation 41(4).
4. A Newspaper advertisement will be placed in a relevant local newspaper [as per Regulation 41(2)(c)].

Consultation with I&APs:

1. An I&AP register will be maintained as per Regulation 42.

2. Public Meeting: All registered I&APs will be invited to a public meeting where a presentation and discussion session will be held.
3. One on One Consultation: A door to door drop of Landowners/occupiers or any other directly affected individual will be undertaken. Preference will first be on informing landowners / occupiers who may be directly impacted by invasive activities (i.e the proposed initial drill sites). It is acknowledged that during this door to door drop not everyone will be personally visited as people may not be present at the property on the day of the dropoff. Where a representative is not met in person they will be deemed to have been consulted via one of the other methods described above.
4. Request for Comments: All I&APs will be encouraged and/or requested to indicate their feedback in writing and comment forms will be provided for this purpose.

Particulars of Public Participation Process:

1. The draft Basic Assessment Report [report as per Regulation 19(1)] will be made available for I&AP to review for a period of 30 days [as per Regulation 19(1)], electronically via the Umhlaba web site, and I hard copy at a local library. E-mail and sms notification of the availability of the document will be sent to registered I&AP only.
2. Once the final Basic Assessment Report is completed all registered I&AP will be notified and provided access to the submitted report via the Umhlaba web site. E-mail notification of the availability of the document will be sent to registered I&AP.

The following information will be requested from interested and affected parties;

- To provide information on how they consider that the proposed activities will impact on them or their socio-economic conditions
- To provide written responses stating their suggestions to mitigate the anticipated impacts of each activity
- To provide information on current land uses and their location within the area under consideration
- To provide information on the location of environmental features on site to make proposals as to how and to what standard the impacts on site can be remedied.
- To make proposals as to how the potential impacts on their infrastructure can be managed, avoided or remedied.

(iii) Summary of issues raised by I&APs

A summary of the issues raised by interested and affected parties will be provided in the Table below once this is received by the end of the allocated consultation period. All original feedback received (which will be summarised below) will be provided in the Appendices of the final document.

Table 2: Summary of issues raised and the EAP's response. [To be completed after the consultation period has concluded]

I&AP AND MEANS OF CONSULTATION		DATE	ISSUE RAISED	EAP'S RESPONSE (AS MANDATED BY MINING RIGHT HOLDER)	SECTION OF REPORT IN WHICH ISSUE IS ADDRESSED
<i>Person consulted</i>	<i>Codes in footer¹</i>	<i>Date on which I&AP response was received.</i>	<i>Summary provided below, written feedback provided in Appendix A.5., where available</i>		
Landowner / Lawful Occupiers of Land					
Lawful Occupiers of Adjacent Properties					
Municipality					
Municipal Councillor					
Organs of State & Other Competent Authorities Affected					
Communities					
Other I&AP					

¹ RM=Registered mail, E=Email, M=One on one Meeting, PM=Public Meeting, T=Telephone

(iv) The environmental attributes associated with the development footprint alternatives

(The environmental attributes 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

(Its current geographical, physical, biological, socio-economic, and cultural character).

Local Setting

The application area is located immediately north and east of the town Stilfontein in the North West Province of South Africa which in turn is located approximately 10km east of the provinces largest city, Klerksdorp (renamed Matlosana). The greater city area incorporates the towns of Orkney, Kanana, Stilfontein, Khuma, Hartbeesfontein and Tigane. This area forms the economic heart of the province and is one of the hubs of the South African gold mining industry, although its importance has been decreasing in recent years. Apart from mining, the city area is positioned as a notable medical, retail and educational centre for the province and Northern Free State and is also a major contributor to South African agriculture in terms of maize, sorghum, groundnuts and sunflowers. The farming district is also known for its Sussex cattle herds where the city is the headquarters of the South African Sussex Cattle Breeders Association.

The information below provides a more detailed description of the receiving environment of the general area within which the application area is situated. It is important to note that no specific specialist studies have been undertaken when defining this baseline environment. In the absence of a governmental Environmental Management Framework for the region, the information provided hereafter is based on available literature and available land use decision making tools such as the South African National Biodiversity Institutes (SANBI) BGIS and the National Environmental Screening Tool.

Geology

The following geological information is taken from the prospecting works programme submitted by the applicant as part of the prospecting right application.

The total application area is underlain by dolomites of the Malmani Subgroup of the Transvaal Sequence (see Figure 8). There is a series of cross-cutting lineaments in the area, representing faults and dolerite dykes of Karroo age. There is one north-south striking Pilansberg type dyke. Along the Koekemoerspruit and flood plain, there are young sediments, mainly clays and sand, of Tertiary age. The Black Reef Formation, consisting of mainly quartzite and shales, outcrops as the Black Reef to the west of the western boundary of the prospecting area. To the south of the prospecting area, but not in the prospecting area, is a Karst Valley within the dolomites, which has been infilled by sediments of Karroo age, mainly sandstones, shales and thin coal bands. The Black Reef at the base of the Black Reef Formation is a known gold bearing horizon, when deposited in the close proximity of underlying older gold horizons, as is the case within the proposed prospecting area. Gold bearing reefs of interest for the NES Project are therefore:

The **Black Reef** occurring at the base of the Malmani dolomites and underlying the entire proposed Prospecting Right area. The area east of the Vaal Reef sub outcrop will be of main interest for this prospecting application. In the past in the Klerksdorp area it was mined on a noticeable scale at Ariston and Machavie, but also at 100 other small operations in the early 1900's.

In most cases the gold in the Black Reef originates from gold scavenged from underlying older gold reefs. Figure 7 provides an illustration of the Black Reef scavenging effect.

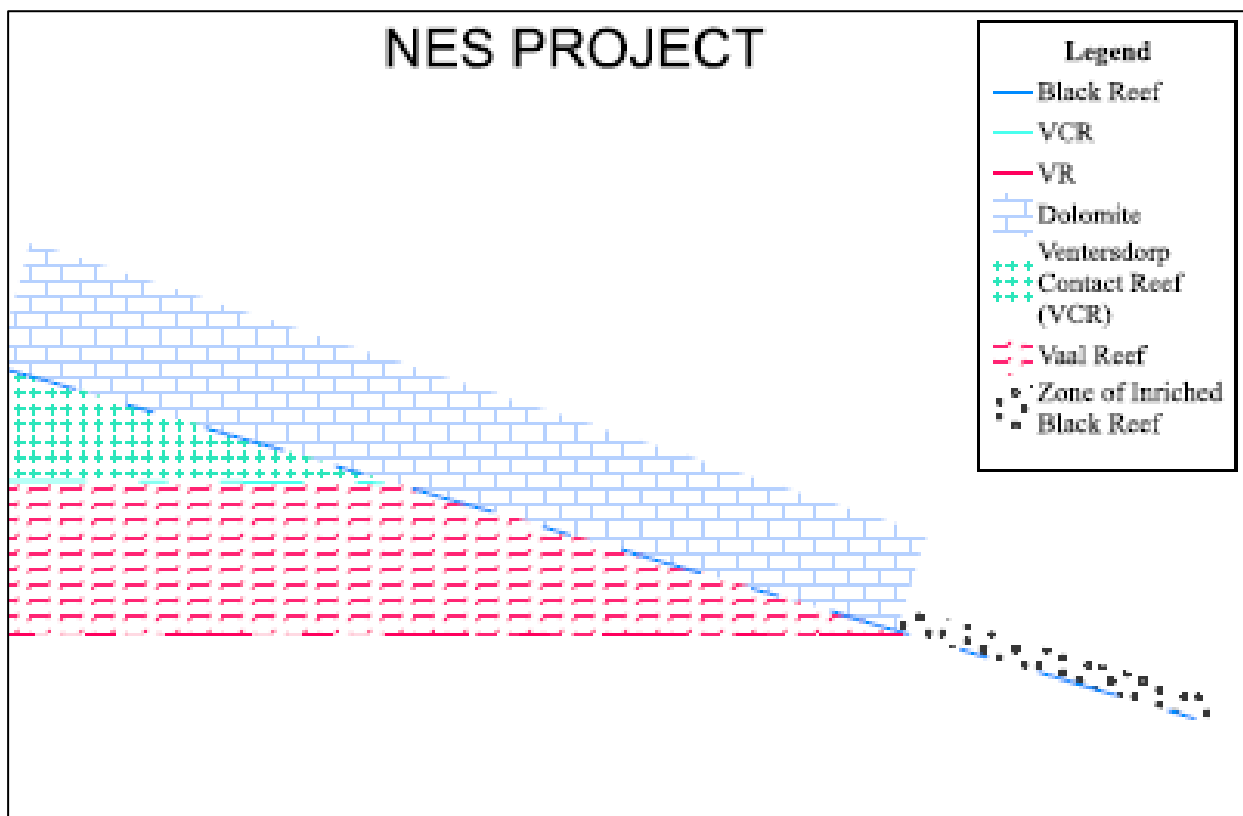


Figure 7: Black Reef Scavenging Effect.

In turn the Ventersdorp lavas lie below the Black Reef, and at the base of the lavas the Ventersdorp Contact Reef (VCR) occurs. This reef was quite extensively mined on the old Stilfontein lease area, with still unmined areas and good indications that payable VCR could extend in a northern direction

The **Ventersdorp Contact Reef (VCR)** occurs at the base of the Ventersdorp lavas and underlies about 70% of the proposed Prospecting area in the east. The VCR was mined extensively in the latter years on the Stilfontein G M Lease area with approximately 2 Mt at a grade of 3.9 g/t of probable reserves still remaining unmined; in this prospecting application this will be the secondary target. The VCR was the main reef mined at Western Reefs and currently at Tau Lekoa.

The **Vaal Reef** was the primary reef mined on the old Stilfontein G M lease area, underlying 80% of the lease. Sub outcropping against the VCR in the north and against the Black Reef in the east. Structurally it is very complex, but with a possible 90% extraction rate. Average recovery grade varying between 7 and 15 g/t. The best values were found in the north east.

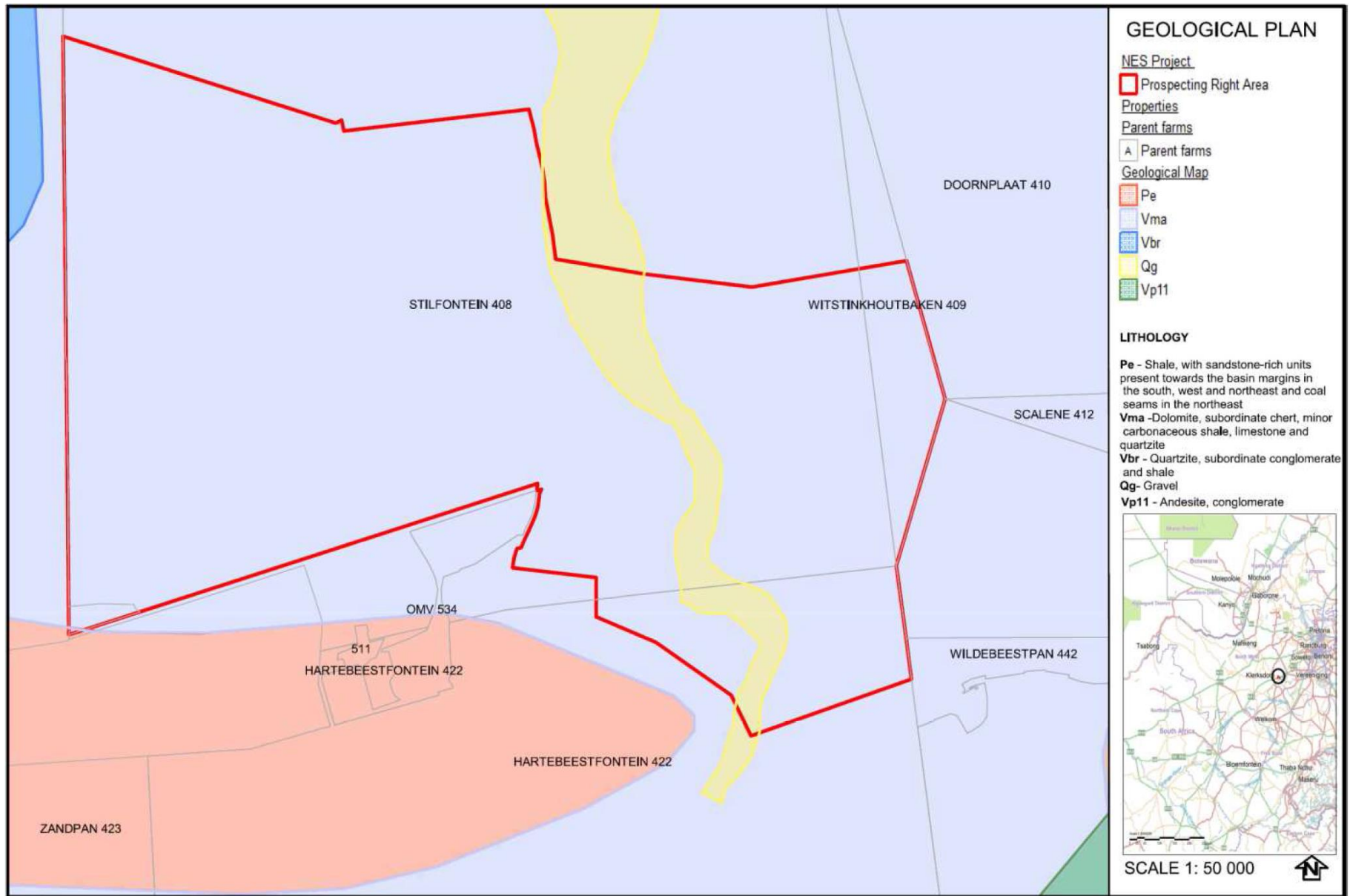


Figure 8: Geological map showing the lithology of the application area.

Soils

SANBI classifies the soils within the application area to be Lithosols (shallow soils on hard or weathering rock) with a soil description being that of minimal development with or without intermittent diverse soils. Lime is rare or absent in the landscape. Figure 9 gives an indication of the visibly shallow topsoil typical throughout the application area. These soils are therefore not perceived to have much agricultural potential as illustrated in Figure 10 (sourced from the National Environmental Screening Tool) which identifies the vast majority of the application area being only of medium agricultural sensitivity.



Figure 9: Indication of the shallow topsoil typical throughout the application area.

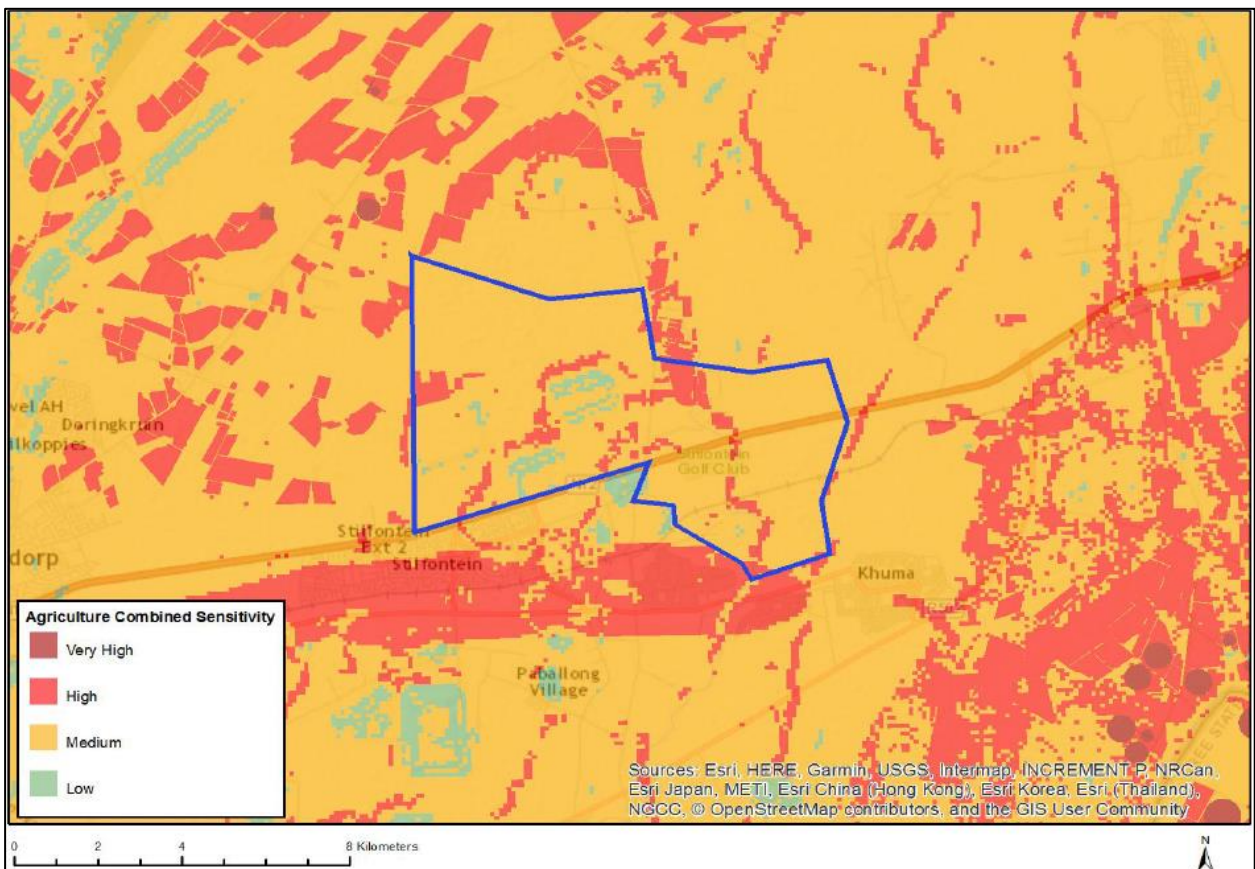


Figure 10: Agricultural sensitivity within and surround the application area.

Climate

The area has a semi-arid climate, with warm to hot summers and cool, dry winters. The average annual precipitation is 482mm, with most rainfall occurring mainly during summer. The following figures sourced from www.worldweatheronline.com provide more insight into the typical atmospheric conditions experienced in the greater area of where the application is located.

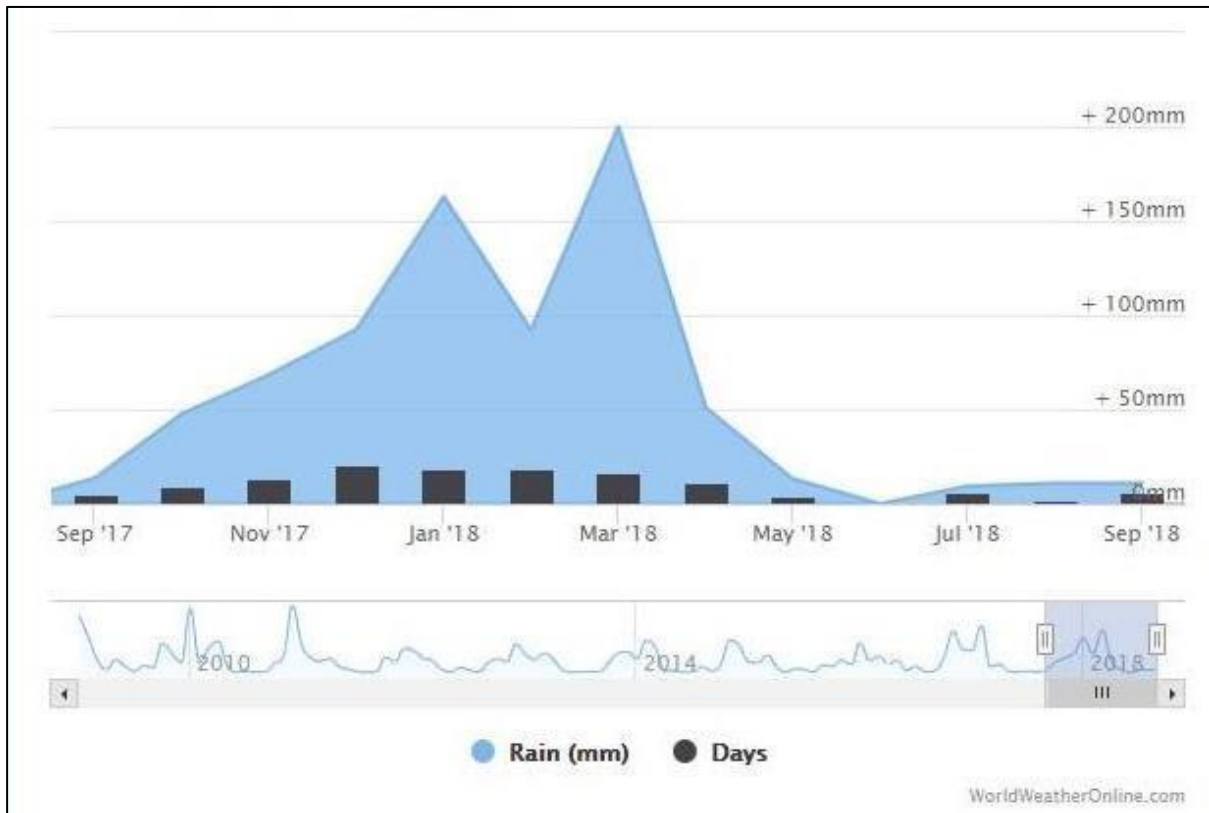


Figure 11: Monthly rainfall and number of rain days for the Klerksdorp area.

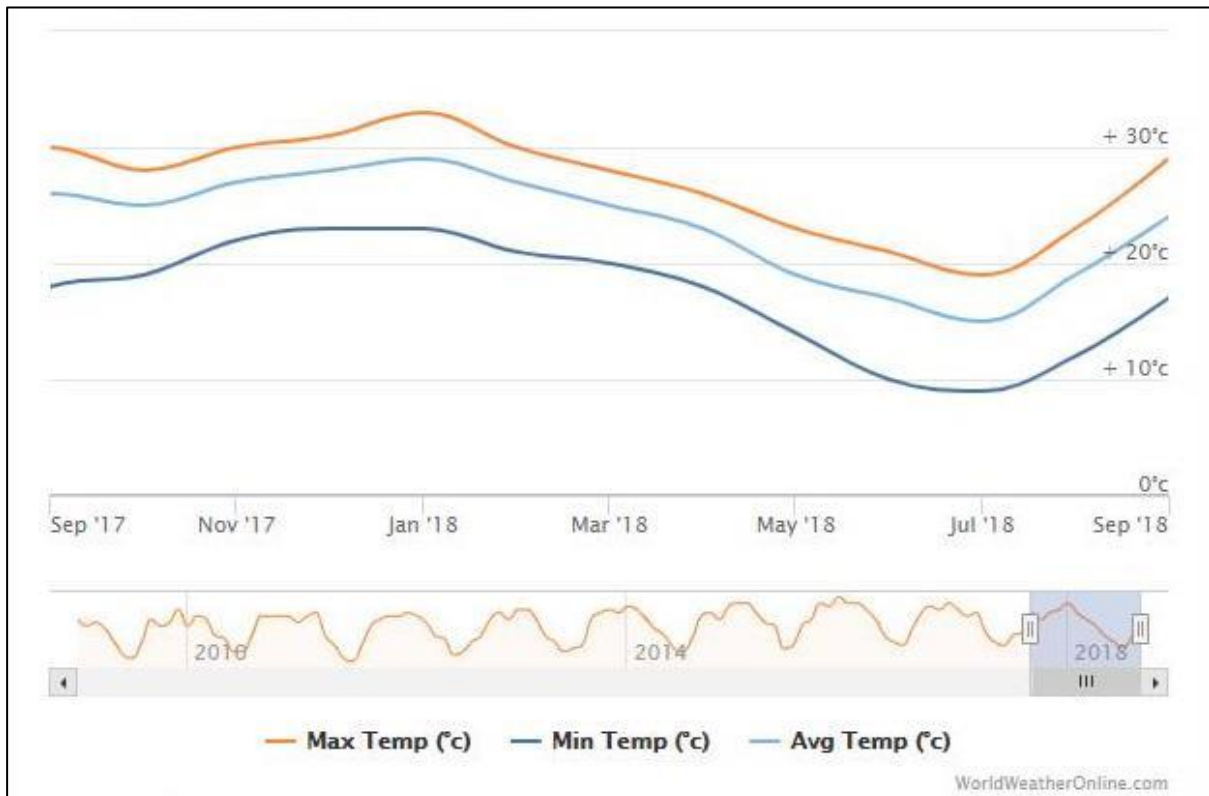


Figure 12: Monthly maximum, minimum and mean temperature for the Klerksdorp area.

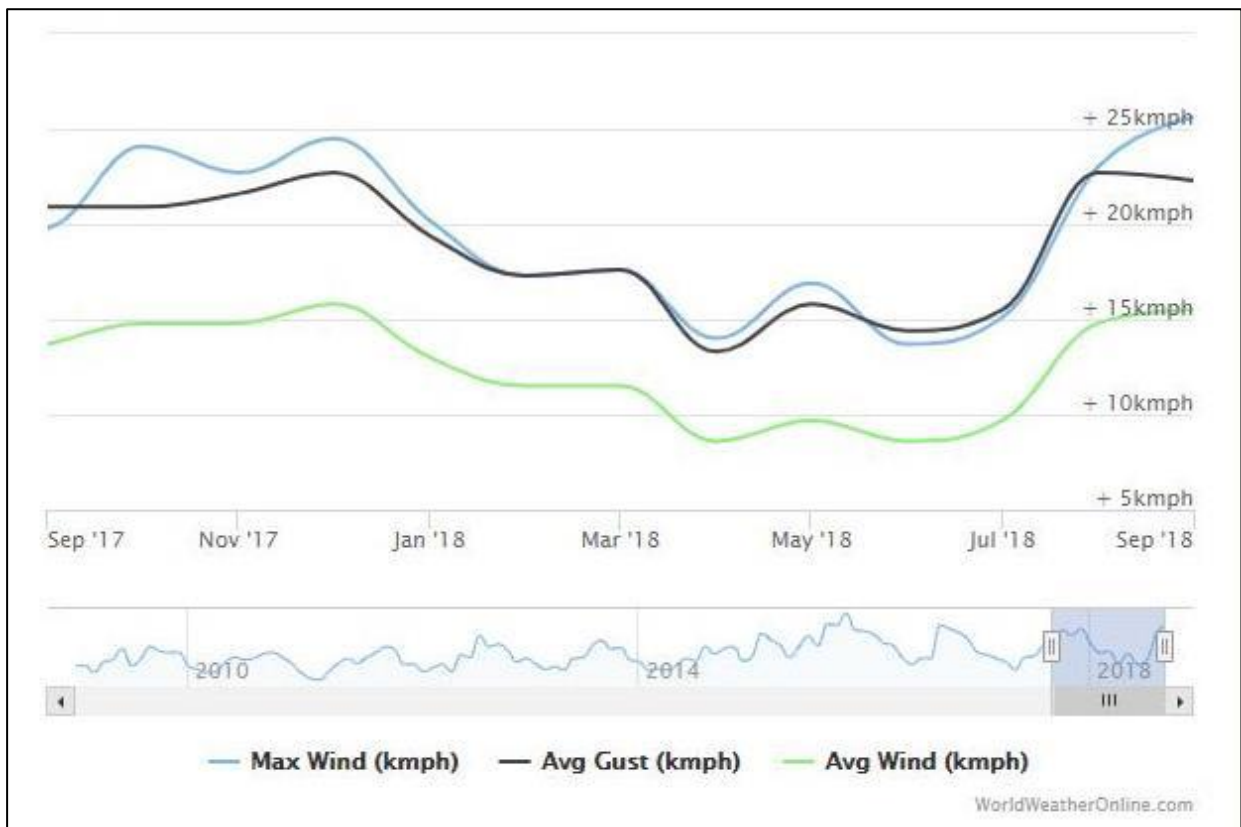


Figure 13: Monthly maximum and average wind speeds for the Klerksdorp area.

Flora and Fauna

The application area falls within the Dry Highveld Grassland bioregion and the specific vegetation type identified by SANBI for the greater area (on the National Vegetation Map) is Vaal Reef Dolomite Woodland. The photographs below indicate the prevailing state of the established flora at each of the proposed sites for the initial 4 boreholes to be drilled. These photographs are also considered to be representative of the whole application area (where land has not been transformed by mining or development) as confirmed by the EAP when conducting a site visit in September 2018 and shows that the predominant vegetation cover is in fact grassland with small sections of dense or open bush (also see Figure 19). Given that only approximately 1ha of vegetation is to be disturbed during the proposed drilling activities and that the vast majority of the application area does not encroach on identified threatened ecosystems (see Figure 14), it is deemed that possible red data flora and fauna species are unlikely to be encountered, however this has not specifically been confirmed by specialist studies.





Water

The koekemoerspruit runs from north to south through the length of the eastern portion of the application area. This is the only identified major water body within the application area. SANBI also identifies a small area of wetland in the central part of the application area and describes it as an unchannelled valley-bottom wetland (see Figure 15).

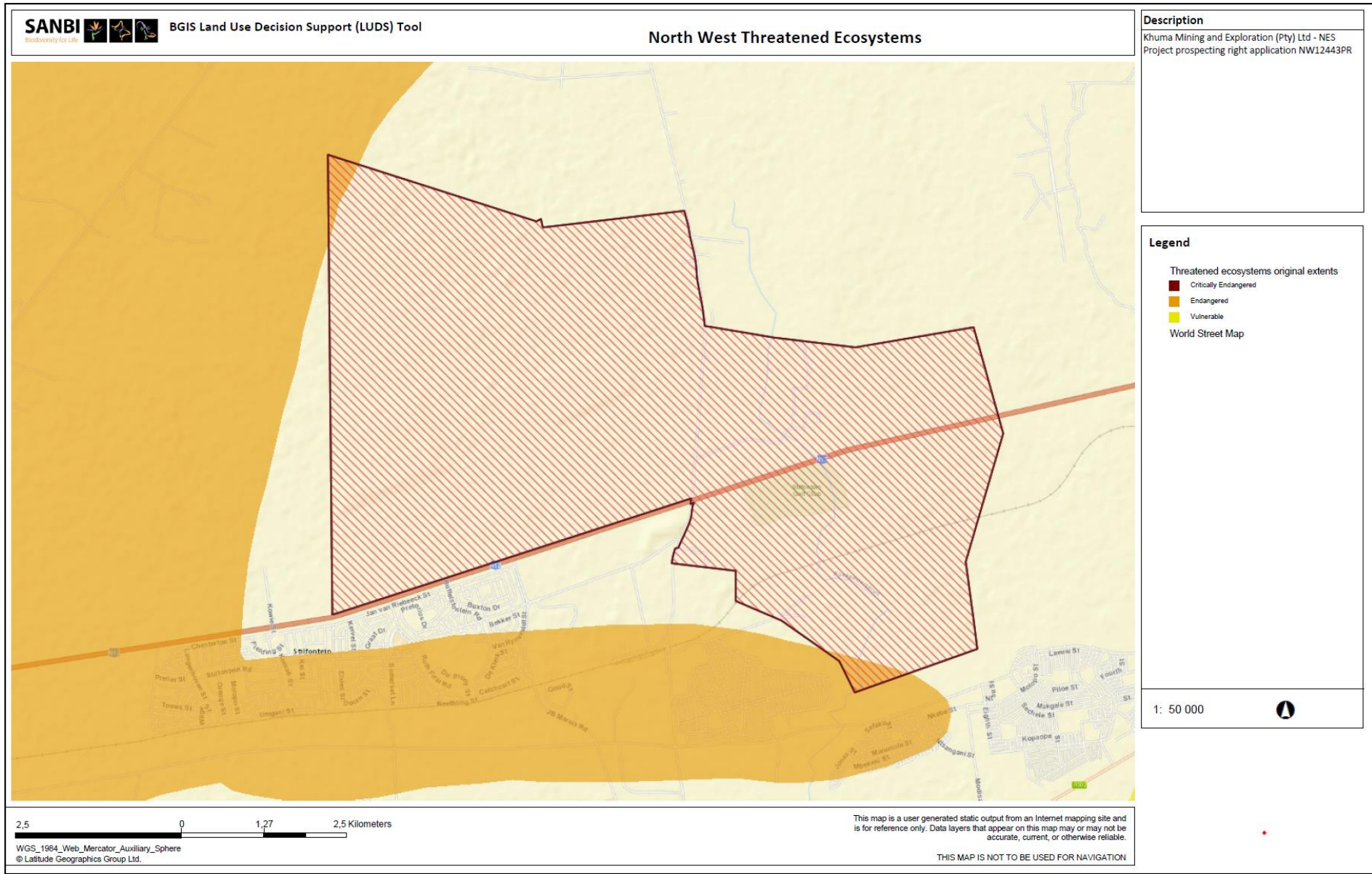


Figure 14: Identified threatened ecosystems in relation to the application area.

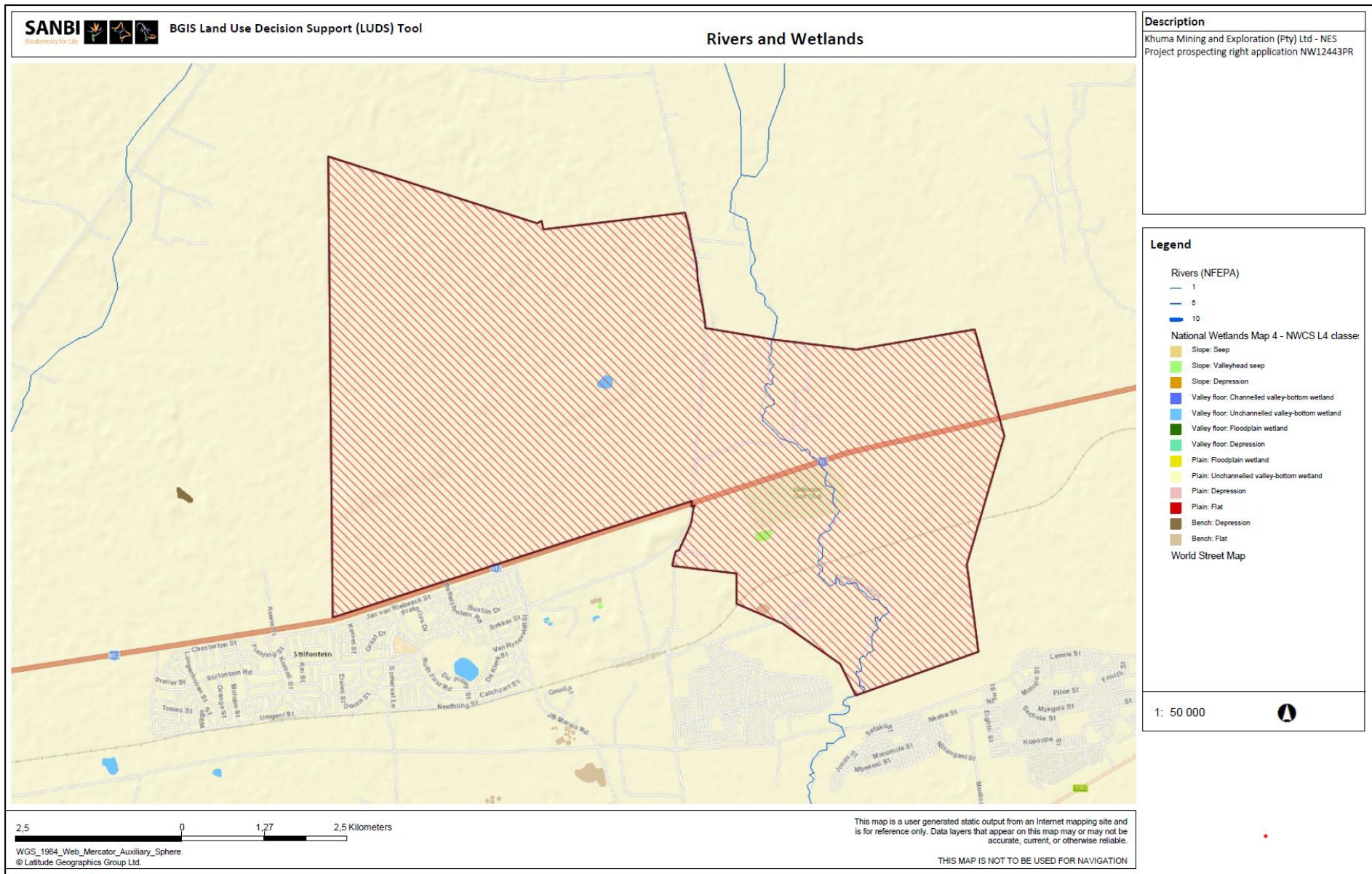


Figure 15: Rivers and wetlands within and surrounding the application area.

Socio-economic structure

The following information has been taken directly from the Integrated Development Plan for the City of Matlosana (2017-2022) within which the application area is located.

According to estimates based on the population growth rate of SA Statistics (2011) and the Matlosana Socio- Economic Report of 2012, the City of Matlosana has a total population of 438 486 people, of whom 403 407 (92%) are urbanised and 35 079 (8%) are rural (mining villages form part of the urban areas). The largest population concentrations are in Jouberton (31%), Kanana, Khuma and Tigane, which represent 67% of the total urban population. Population density is estimated at 123 persons per km². The population distribution is indicated on Figure 16. Population growth and household growth has declined over time. This can be ascribed to the fact that the local economy has become less dependent on the mining sector with the tertiary sectors growing in the long term.

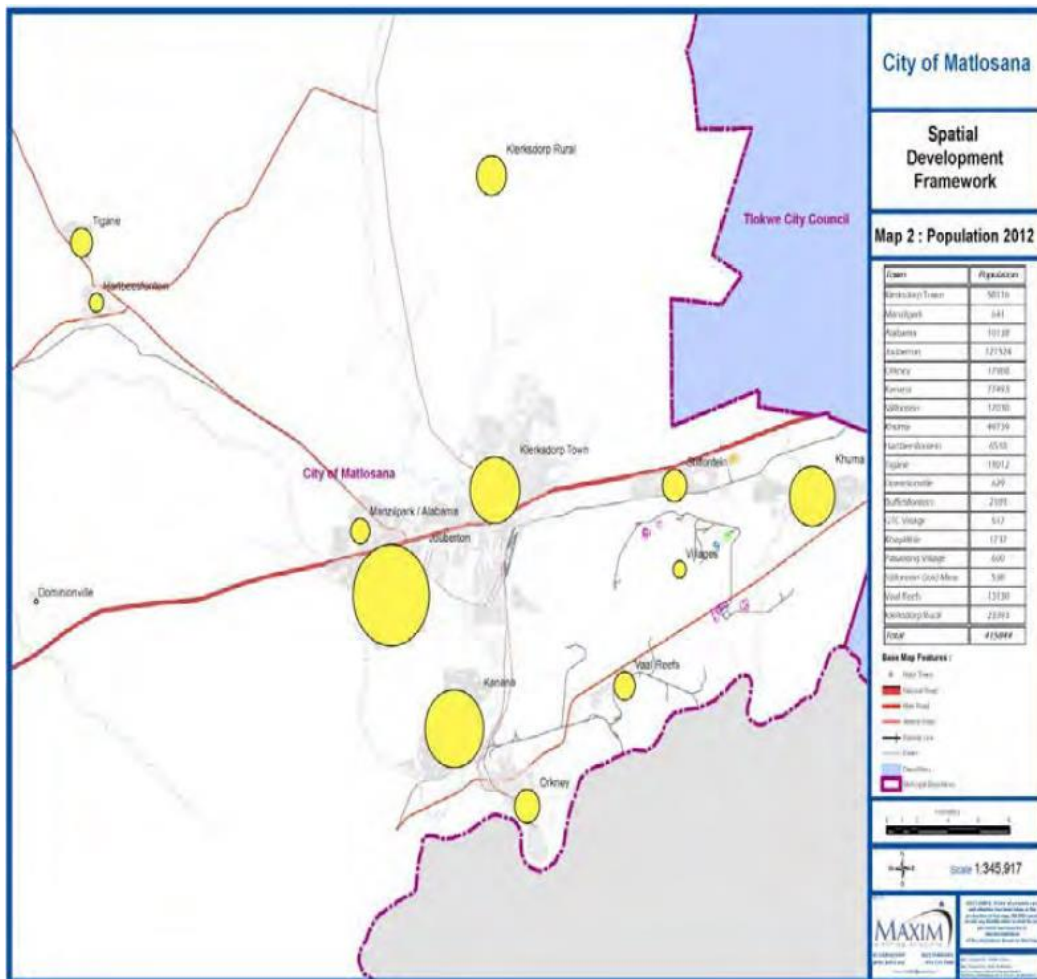


Figure 16: Population distribution map for the City of Matlosana.

SOCIO ECONOMIC STATUS						
Year	Housing Backlog as proportion of current demand	Un-employment Rate	Proportion of Households with no Income	Proportion of Population in Low-skilled Employment	HIV/AIDS Prevalence	Illiterate people older than 14 years
2014/15	21%	24%	26%	52%	20%	44%
2015/16	22%	25%	27%	55%	18%	42%
2016/17	22%	33%	16%	55%	18%	41%

Since the early 1990s but more specifically since 2001, mining activities have downscaled drastically. This downscaling also leads to nearly 80% of the original workforce in 1996 being retrenched by 2016. The declining mining industry has resulted in the number of people living in poverty in the City of Matlosana almost doubling between 1996 and 2016.

Currently, the N12 Treasure Route puts Klerksdorp in the centre of new developments. Towards the west of the N12, developments comprise residential development, retail nodes and mixed land usages. This is where the Rio Tusk Casino and Shell garage (future truck inn) was developed as well as a Tower Mall who opened at the end of 2013. Towards the east of this corridor the new Matlosana Mall opened at the end of 2014. This development has also affected the decentralisation of business into the Northern suburbs of Klerksdorp and business activities along the N12.

Population and household growth have slightly increased over time. The average annual population growth between 2011 and 2016 was 1.04% and the average annual household growth between 1996 and 2016 was 3.46%. The household growth has increased over time and in 2015/16 the growth rate was at 1.04%. Population growth showed a slower increase and was at 0.35% in 2016.

Sites of cultural heritage importance

No specific sites of cultural heritage importance have been identified to date within the proposed application area. Figure 17 and Figure 18 provide the relative sensitivities as identified by the National Environmental Screening Tool for archaeological/cultural heritage and paleontological themes respectively. This suggests that while no sites have been identified to date, there is a high archaeological and cultural heritage sensitivity along the Koekemoerspruit and a medium sensitivity in the very north west section of the application area where sites could potentially be found. There are however no sensitive areas identified within the application area for potential paleontological sites.

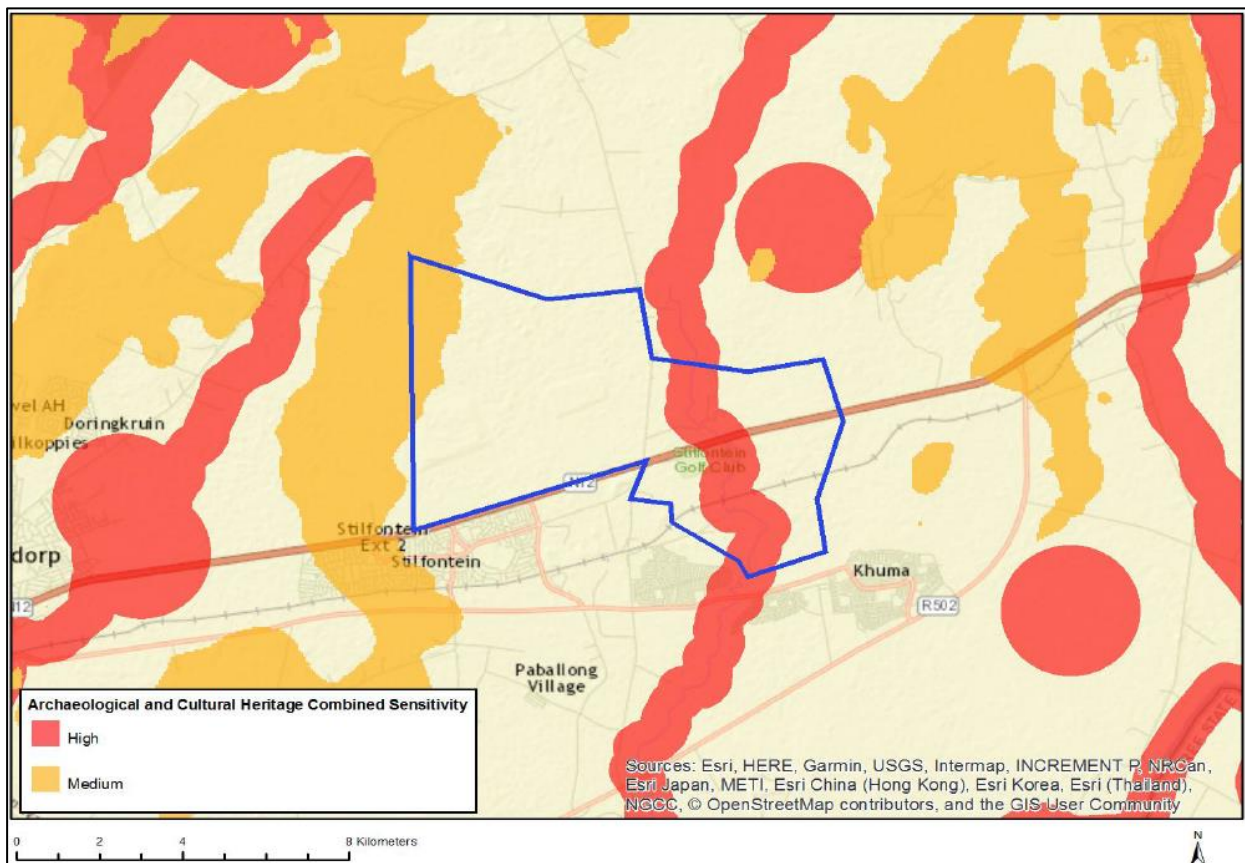


Figure 17: Relative archaeological and cultural heritage sensitivity within and surrounding the application area.

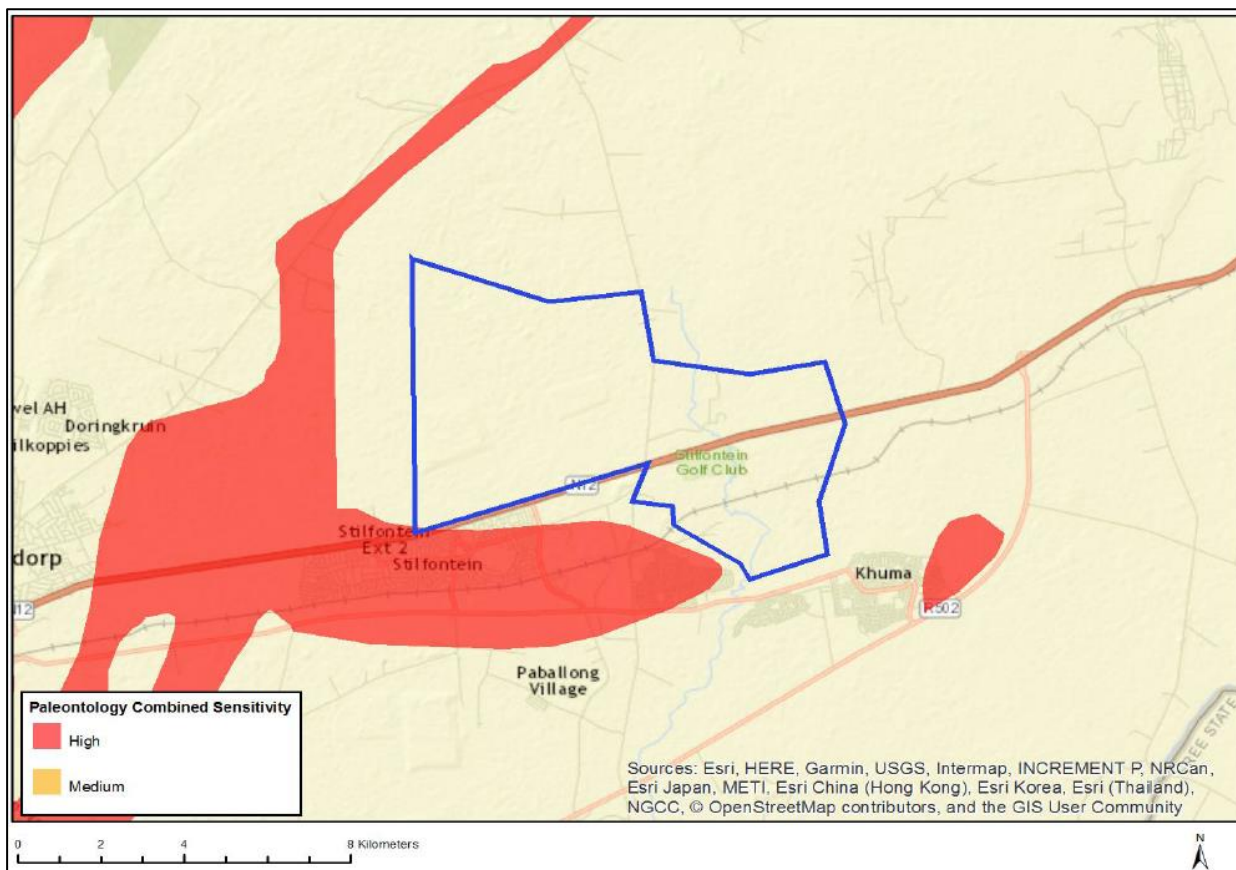


Figure 18: Relative paleontological sensitivity within and surrounding the application area.

(b) Description of the current land uses

Figure 19 provides an indication of the current land uses within and surrounding the application area. SANBI identifies that the vast majority of the application area is natural land comprising of grassland (light brown), shrubland (medium green) and woodland (dark green). Some of these lands are used for grazing livestock and game (as noted by the EAP during the site visit conducted in September 2018). The second largest land use is land disturbed by mining including historical tailing deposits (red) and the recently removed deposits (pink). Other land uses include cultivated lands (medium and dark brown) and recreational sports facilities (bright green). Very little of the land has been developed.

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

As indicated in Figure 19 the vast majority of the application area is undeveloped. Major infrastructure within the application area includes the N12 national road running east to west through the eastern part of the application area, a secondary road (extension of Vermaasdrift Rd) running north to south through the central part, and a national railway running east to west in the south eastern parts (see Figure 20). There are otherwise some isolated buildings in the central areas associated with small scale farming, the Stilfontein Golf Course, the Engen Megastop, a power distribution station, and MMU Motors.

Environmental features identified by SANBI within and surrounding the application area are shown in Figure 21. The most important area is the aquatic ecological support areas buffering the Koekemoerspruit. There is also a very small section of critical terrestrial biodiversity identified in the very north western section and two patches of terrestrial ecological support areas in the north eastern section. Critical Biodiversity Areas are areas required to meet biodiversity targets for ecosystems, species and ecological processes, as identified in a systematic biodiversity plan. Ecological Support Areas are not essential for meeting biodiversity targets but play an important role in supporting the ecological functioning of Critical Biodiversity Areas and/or in delivering ecosystem services.

(d) Environmental and current land use maps

(Show all environmental, and current land use features).

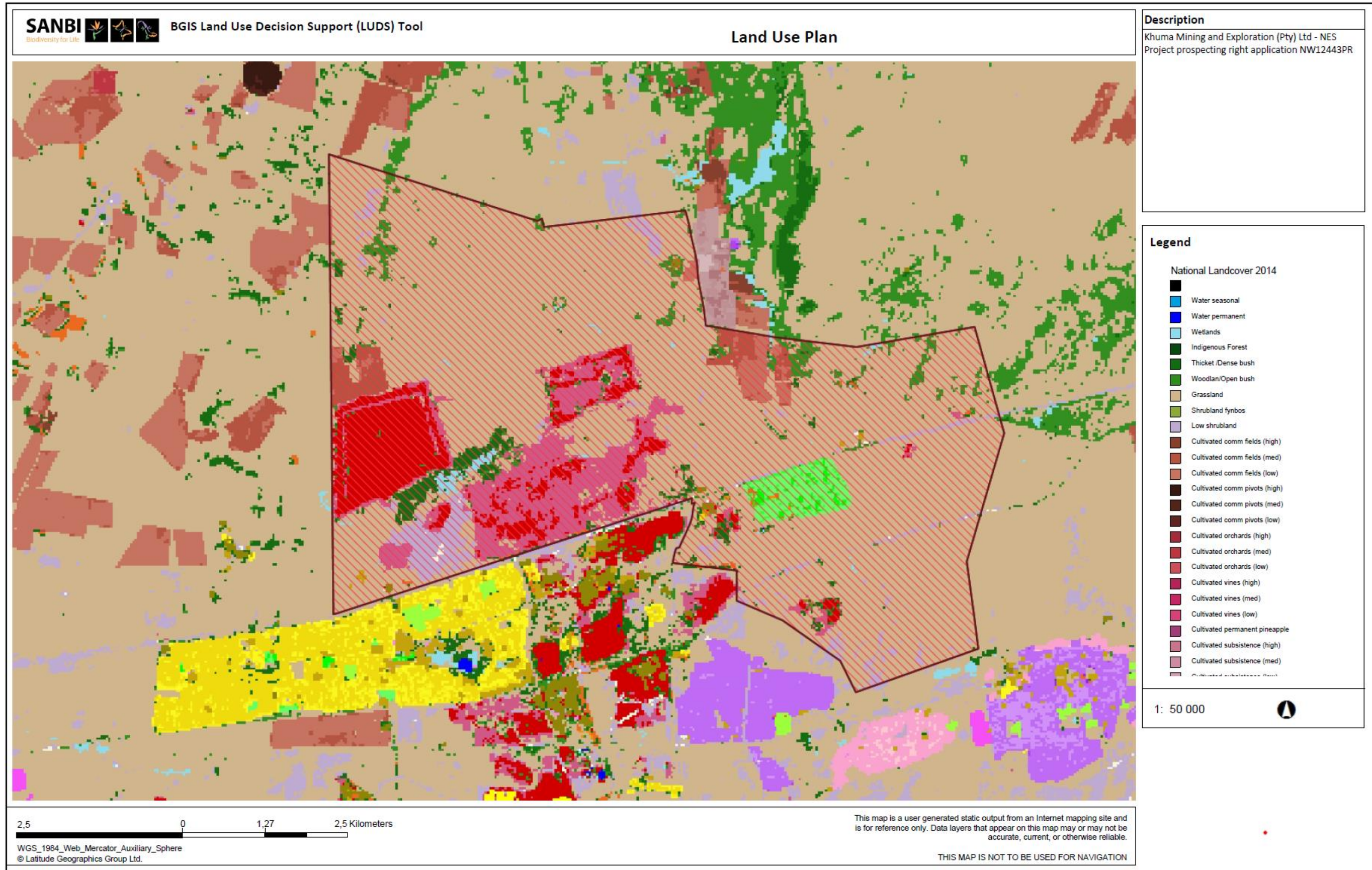


Figure 19: Land Use map indicating the current land uses within and surrounding the proposed prospecting right area.

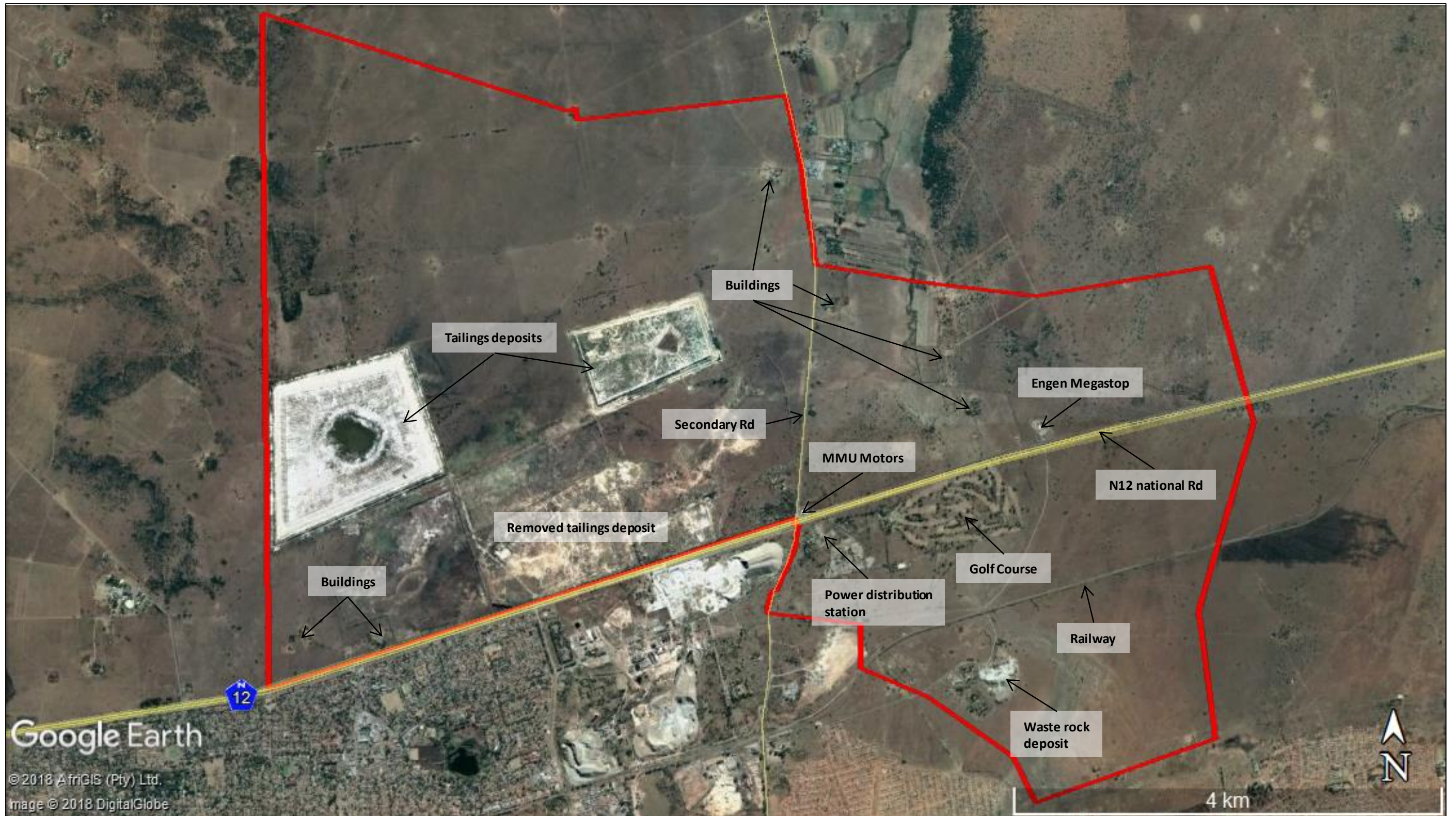


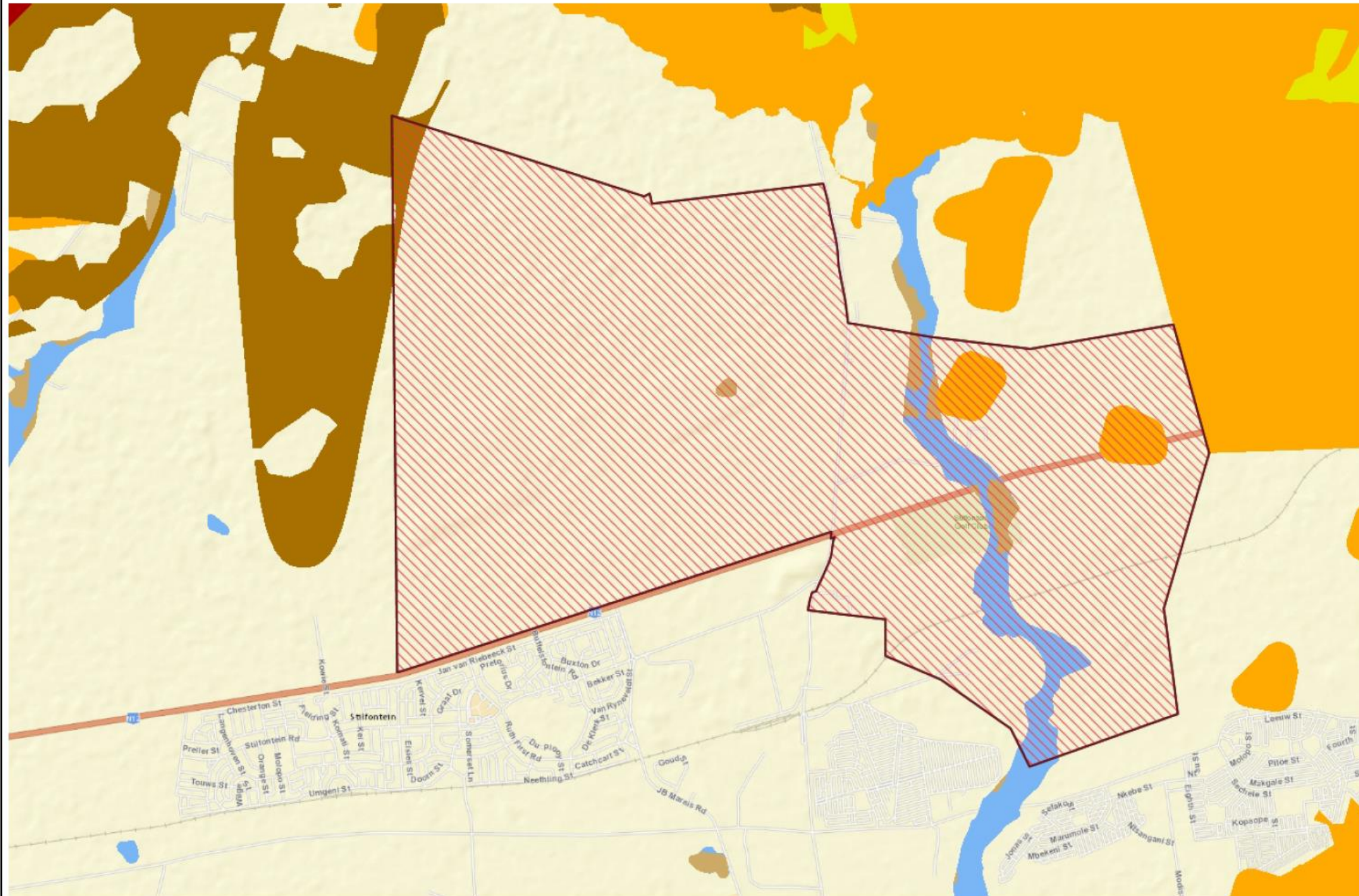
Figure 20: Identification of existing infrastructure within the application area.

Description

Khuma Mining and Exploration (Pty) Ltd - NES
Project prospecting right application NW12443PR

Legend

- Terrestrial Critical Biodiversity Areas**
- Critical Biodiversity Area 1
 - Critical Biodiversity Area 2
 - Ecological Support Area 1
 - Ecological Support Area 2
- Aquatic Critical Biodiversity Areas**
- Critical Biodiversity Area 1
 - Critical Biodiversity Area 2
 - Ecological Support Area 1
 - Ecological Support Area 2
- World Street Map**



1: 50 000



2.5 0 1.27 2.5 Kilometers

WGS_1984_Web_Mercator_Auxiliary_Sphere
© Latitude Geographics Group Ltd.

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Figure 21: Environmental sensitivity map indicating sensitive areas that should be considered when undertaking prospecting activities.

(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

(Provide a list of the potential impacts identified of the activities described in the initial site layout that will be undertaken, as informed by both the typical known impacts of such activities, and as informed by the consultations with affected parties together with the significance, probability, and duration of the impacts. Please indicate the extent to which they can be reversed, the extent to which they may cause irreplaceable loss of resources, and can be avoided, managed or mitigated).

The table below will be updated based on the feedback received from Interested and Affected Parties during the consultation process.

Phase	Activity	Aspect	Source / Cause	Impact	Consequence					External Factors		Ranking Significance (WITHOUT controls)	Reversability of impact	NEMA Hierarchy	
					Nature	Extent	Duration	Frequency	Probability	I&AP	Cumulative				
1. Literature review	• Literature review and desktop studies • Analysis of results from historical boreholes • Determining final location of initial drill site	Socio-economic	Commencing with prospecting activities over the application area.	Potential decrease in property values Altering of the sense of place of the local area.	Neg	Medium	On-site	Long	Daily	Medium	No	No	Medium	Yes - impact reverses when prospecting ceases	Manage
2 & 3. Initial drilling and infill drilling	Drilling (access track, drill pad, drilling, stores, security, core cutting, sampling, waste & sanitation)	Air quality	Dust entrainment from; stripping activities, using access tracks, implementing drilling and exhaust emissions	Dust fallout from prospecting activities	Neg	Low-Med	Neighbouring	Very short	Monthly	Low	No	Yes	Low-Medium	Yes - impact reverses when drilling stops	Manage
		Noise nuisance	Noise generated from vehicle / drilling operations	increased ambient noise levels	Neg	Medium	Neighbouring	Very short	Monthly	Medium	No	Yes	Medium	Yes - impact reverses when drilling stops	Manage & Mitigate
		Visual	Drill rig temporarily visible	visible drill rigs	Neg	Low-Med	Local	Very short	Monthly	Low	No	No	Low-Medium	Yes - impact reverses when drilling stops	Manage
		Water	Pollution of surface water resource through oil spills / spills from chemical toilets impacting on local water course(s)	Pollution of a water resource	Neg	Medium	Regional	Short	6 Monthly	Low	No	Yes	Low-Medium	Yes - impact reverses when pollution source is removed.	Avoid, Manage & Mitigate
		Soil	Soil is not stored for rehabilitation requirements / soil is altered through hydrocarbon spills, compaction or erosion	Degradation of soil quality effecting the ease to implement rehabilitation activities	Neg	Medium	On-site	Medium	Monthly	Low	No	No	Low-Medium	Yes - impact reverses once drill sites are rehabilitated.	Manage
		Fauna / flora (Ecology)	Stripping of flora and impacting on habitats when clearing a drill pad area or creating a new access track.	Destruction of flora and impact on habitats	Neg	Medium	On-site	Medium	Monthly	Medium	No	No	Low-Medium	Yes - impact reverses once drill sites are rehabilitated.	Avoid & Manage
		Heritage	Clearing of area for the drill pad may effect a heritage resource.	impacting a heritage resource	Neg	Med-High	On-site	Very short	Monthly	Improbable	No	No	Low	Yes - impact reverses when invasive prospecting ceases.	Avoid
		Social	Unauthorised access to land. Lack of consideration of landowners requests. Not rehabilitating land.	Unhappy landowners / land occupiers	Neg	Med-High	On-site	Long	Monthly	Medium	Yes	Yes	Medium	Yes - impact reverses when invasive prospecting ceases.	Avoid & Manage
Concurrent rehabilitation	Concurrent rehabilitation of drill pads upon completion of drilling activities	All environmental aspects and socio-economic impacts on interested and affected parties	Implementation of successful concurrent rehabilitation activities	Reverse the temporary negative impacts associated with the drilling activities.	Pos	Medium	On-site	Medium	Monthly	High	No	No	Medium	N/A	Manage
4. Documentation	Resource statement Prefeasibility study Specialist studies Bankable feasibility study Preparation for Mining Authorisation	All environmental aspects and socio-economic impacts on interested and affected parties	Specialist requiring access to properties to complete various studies	Social impacts	Neg	Low-Med	On-site	Very short	6 Monthly	Low	No	No	Low	Yes - impact reverses when invasive prospecting ceases.	

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

(Describe how the significance, probability, and duration of the aforesaid identified impacts that were identified through the consultation process was determined in order to decide the extent to which the initial site layout needs revision).

The Umhlaba Impact Ranking Tool is a quantitative manner of investigating, assessing and evaluating the potential impacts / risks resulting from the activities associated with the proposed activity on the receiving environment; i.e. the biophysical, socio-economic and cultural heritage environment.

Legal Requirements:

The Umhlaba Impact Ranking Tool has been developed taking cognisance of the requirements of the MPRDA, The 2014 EIA regulations of the NEMA and the requirements of ISO 14001.

Regulation 50(c) of GNR 527 to the MPRDA, stipulates that the Environmental Impact Assessment (EIA) must include “an assessment of the **nature, extent, duration, probability** and **significance** of the identified potential environmental, social and cultural impacts of the mining operation, including the **cumulative** environmental impacts”.

Appendix 3, (3)(j) of GNR 982 of NEMA stipulates that the “assessment of each identified potentially significant impact and risk, including – (i) **cumulative** impacts, (ii) the **nature**, significance and consequence of the impact and risk, (iii) the **extent** and **duration** of the impact and risk, (iv) the **probability** of the impact and risk occurring, (v) the **degree** to which the impact and risk can be **reversed**, (vi) the **degree** to which the impact and risk may cause **irreplaceable loss of resources**; and (vii) the **degree** to which the impact and risk can be **mitigated**”.

ISO 14001, Section 4.3.1 Environmental Aspects stipulates that “the organisation shall establish, implement and maintain a procedure

- a) to identify the environmental aspects of its activities, products and services within a defined scope of the environmental management system that it can control and those that it can influence taking into account planned or new developments, or new or modified activities, products and services, and
- b) to determine those aspects that have or can have significant impacts on the environment”

When considering the above requirements and the purpose of this report, the significance of impacts / risks will be determined through the implementation of the Umhlaba Impact Ranking Tool as described below.

Definitions: The terms “environment”, “activity”, “aspect” and “impact” will be used technically throughout this document, and so it is important to explain what is meant by each term in the context of the Impact Assessment.

- **Environment (as defined in NEMA):** The **surroundings within which humans exist and that are made up of;**
 - the land, water and atmosphere of the earth;
 - micro-organisms, plant and animal life;
 - any part or combination of the above, and the interrelationships among and between them; and
 - the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing;
- **Activity:** A specific deed, action or function, that takes place at the Operation, such as;
 - Drilling
 - Vehicle movement on site
 - Breaking up concrete foundations.
- **Aspect:** Considered to be a direct effect of an *activity*, which has an influence on the *environment* (and is neither categorised as positive or negative), such as;
 - Drilling will results in noise, the noise being the *aspect* of the *activity*.
- **Impact:** The end-result of an *aspect* that occurred due to an *activity*, resulting in an influence on the *environment*, which is either categorised as positive or negative (a subjective categorisation), such as;
 - Drilling will results in noise (*aspect*) which can be a nuisance to surrounding I&AP (the *impact*).

Criteria to Consider when Determining Significance: The ranking of impacts / risks (also known as determination of significance) is estimated using two criteria, namely *Consequence* and *Probability*. These consider the contributing factors / criteria listed in the legislation. The definitions of each are provided below. The **Consequence** of an impact resulting from an aspect is expressed as a combination of:

Nature of impact: An indication of the extent of the damage (negative impacts) or benefit (positive impacts) the impact inflicts on natural, cultural, and/or social functions (environment).

Extent of impact: A spatial indication of the area impacted (i.e. how far from activity the impact is realised).

Duration of impact: A temporal indication of the how long the effects of the impact will persist, assuming the activity creating the impact ceases. For example, the impact of noise is short lived (impact ceases when activity ceases) whereas the impact of removing topsoil exists for a much longer period of time.

Frequency of the aspect occurring: An indication of how often an aspect, as a result of a particular activity, is likely to occur. Note that this does not assess how often the impact occurs. It applies only to the aspect. For example blasting takes place monthly and haulage daily while the resultant frequency of the impacts occurring will vary based on a number of factors.

The **Probability** of an impact resulting from an aspect is expressed as:

- **Probability** of impact occurring: An estimated indication of the potential for an impact to occur.

The **Significance** of an impact: Considering Consequence and Probability (defined above), Significance is an indication of how serious a negative impact is anticipated to be and how beneficial a positive impact may be. Significance is considered to be High, Medium-High, Medium, Low-Medium or Low. A description of the ranking process is provided below.

It must also be noted that the final significance ranking of an impact will take cognisance of other aspects specified in the legislation, such as:

- Cumulative impacts
- Impacts / Issues raised by interested and affected parties (I&AP).

How these are incorporated in the ranking is explained below.

Significance Ranking of Impact / Risk:

Consequence and Probability

Using the criteria listed in the legislation, scores are assigned to each the criteria, as outlined in the table below. The scoring range in the table has been selected to represent the scale in which varying impacts can occur. The combination of scores is then used to determine the **Consequence** and **Probability**, as described below.

- Consequence is expressed as the sum of all criteria in order to get a score out of 100.
- Probability of the impact occurring is expressed as a score out of 100.

Scoring for environment impact assessment criteria.

CONSEQUENCE	NATURE OF IMPACT:		
	Low	Impacts affect the environment in such a way that natural, cultural and / or social functions and processes are not affected.	1
	Low-Medium	Impacts affect the environment in such a way that natural, cultural and / or social functions and processes are affected insignificantly.	5
	Medium	Impacts affect the environment in such a way that natural, cultural and / or social functions and processes are altered.	10
	Medium-High	Impacts affect the environment in such a way that natural, cultural and / or social functions and processes are severely altered.	15
	High	Impacts affect the environment in such a way that natural, cultural and / or social functions and processes will temporarily or permanently cease.	25
	EXTENT OF IMPACT:		
	On-site	Impact occurs on-site (within the boundary of the application area).	1
	Neighbouring	Impact occurs within a 5km radius of the site.	5
	Local	Impact occurs within a 20km radius of the site.	10
	Regional	Impact occurs within a 100km radius of the site.	15
	National	Impact occurs within South Africa.	25
	DURATION OF IMPACT:		
	Very Short-term	The impact will cease within 1 week if the activity is stopped.	1
	Short-term	The impact will cease within 6 months if the activity is stopped.	5
	Medium-term	The impact will cease within 1 years if the activity is stopped.	10
	Long-term	After the operational life of the operation.	15
	Permanent	Where mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient.	25
FREQUENCY OF OCCURRENCE OF THE ACTIVITY:			
Annually or less	Activity occurs at least once in a year or less frequently.	1	
6 months	Activity occurs at least once in 6 months.	5	
Monthly	Activity occurs at least once a month.	10	
Weekly	Activity occurs at least once a week.	15	
Daily	Activity occurs daily.	25	
PROBABILITY	PROBABILITY OF POTENTIAL OCCURRENCE OF THE IMPACT:		
	Improbable	The possibility of the impact materialising is very low either because of design or historic experience.	10
	Low	The possibility of the impact materialising is low either because of design or historic experience.	30
	Medium	There is a possibility that the impact will occur.	60
	High	There is a distinct possibility that the impact will occur.	80
	Definite	The impact will occur regardless of any prevention measures.	100

The **final significance** ranking of an impact will also take cognizance of;

- Impacts / Issues raised by **Interested and Affected Parties**: For new and existing operations, I&AP will be consulted, either during the compilation of the impact assessment (for new operations) or part of an existing / on-going consultation process (for existing operations). During this consultation process, I&AP will identify concerns relating to impacts resulting from activities associated with the operation. Impacts identified by I&AP's will be assigned additional scoring.
- **Cumulative Impacts**: Cumulative Impacts will be considered where an off-site activities (not related to the operation being evaluated) will result in the same impact at the receptors being considered.

Below is a summary of the influence of external factors on final significance scoring:

EXTERNAL FACTOR	DESCRIPTION	POINTS TO ADDED
Concern raised by I&AP	Unresolved Impact rasied as a concern by an I&AP	100
Cumulative impact	Impact can be considered cumulatively with off site impacts	50

The final significant ranking takes cognisance of the initial scoring plus any additional score associated with allocating an external factor. At no time can the sum total of all the scores exceed 1000.

The significance of an impact is considered to be classified into one of the following; High, Medium-High, Medium, Low-Medium or Low. Each of the classified impact has a scoring band into which it falls. The band has been determined by a combination of 25 years of experience of Umhlaba employees. The definition of each classification is provided below and focuses on the need for mitigation or management.

Low (4 – 60)	Management measures may not be necessary, but in some instances are encouraged to ensure that the impact remains of Low significance.
Low-Medium (61-200)	Management measures are usually encouraged to ensure that the impacts remain of Low-Medium significance.
Medium (201-400)	Management measures are required to ensure, at minimum, the significance of the impact does not increase.
Medium-High (401-650)	Management measures are required to reduce the significance of the impact to, at least, Medium significance.
High (>651)	Impact should be avoided, or if not possible, managed to reduce the significance of the impact to, at least, Medium significance (where possible).

Additional Factors that do not contribute to the Significance of an Impact

After completing the determination of significance of an impact, there are additional factors, which in terms of NEMA which need to be considered. NEMA stipulates that the impact assessment must consider the following for “each identified potentially **significant impact**”; namely;

- “the degree to which the impact can be reversed”,
- “the degree to which the impact may cause irreplaceable loss of resources”, and
- “the degree to which the impact can be mitigated.

The Umhlaba tool regards a “significant impact” as one with an initial ranking of medium or higher.

Although these factors are important in the evaluation of the impacts (particularly for new developments), they will not be applicable to all impacts and hence, may not influence the significance rating of an impact (explained below).

- **Degree to which the Impact can be Reversed:** An indication to the degree to which the impact can be reversed will be provided. Three categories have been allocated:
 - **Not possible:** Once the impact has occurred it will be permanent and cannot be reversed.
 - **Potentially:** With appropriate management and mitigation measures there is a potential the impact can be reduced / reversed.
 - **Likely:** With appropriate management and mitigation measures there is a good likelihood that the impact can be reduced / reversed.
- **Degree to which the Impact can be Mitigated:** This requirement is essentially achieved by determining significance before consideration of controls and then the significance after the consideration of management controls. The difference between the before and after controls is an indication of the “degree to which the impact can be mitigated”.
- **Degree to which the Impact may cause Irreplaceable Loss of Resources:** Aspects that need to be considered in terms of irreplaceable loss of resources should be discussed at the beginning of the impact assessment. An example is the removal of geological material.

(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

(Provide a discussion in terms of advantages and disadvantages of the initial site layout compared to alternative layout options to accommodate concerns raised by affected parties).

No alternatives have been considered. The impacts identified with this application have been presented in Section v above.

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

(With regard to the issues and concerns raised by affected parties provide a list of the issues raised and an assessment/ discussion of the mitigations or site layout alternatives available to accommodate or address their concerns, together with an assessment of the impacts or risks associated with the mitigation or alternatives considered).

This section can only be completed after receiving I&AP feedback at the end of the consultation period.

Table 3: Issues raised and possible mitigation measure.

COMMENTS RECEIVED ON THE DRAFT & REVISED SCOPING REPORT	
I&AP COMMENTS RAISED	POSSIBLE MITIGATION MEASURES TO ADDRESS I&AP COMMENTS

(ix) Motivation where no alternative sites were considered

There is no layout alternative for a drill site. The final positioning of a drill site can be slightly altered to accommodate landowner requirements (within reason). See Figure 3 to Figure 6 for an indication of the preferred sites identified for the initial drilling activities and the target areas for the infill drilling activities. Please note that the final positioning of drilling activities will only be confirmed once the relevant landowner has been consulted.

(x) Statement motivating the alternative development location within the overall site.

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

The drill sites presented in Figure 3 to Figure 6 are the preferred target areas based on available geological and other historical mining information. The drill sites are able to be repositioned within reason depending on landowner requirements.

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 RESPECT OF THE FINAL SITE LAYOUT PLAN) THROUGH THE LIFE OF THE ACTIVITY

(Including (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures).

The below process was followed for a screening level impact assessment in order to determine the potential impacts of the proposed activities to be assessed in more detail during the Basic Assessment process. The full process undertaken to assess and rank impacts is outlined in Section 3(g)(vi) and the complete results of the assessment is given in Appendix A.4.

Considering the baseline environment, the proposed activities were evaluated against all the below environmental attributes to identify potential impacts / risks.

Environmental Attributes (presented alphabetically):	
• Aesthetics / Visual affects	• Sites of heritage & cultural interest
• Air Quality / Dust	• Soil
• Ecology / Fauna and Flora	• Socio-economic
• Geological features / subsidence	• Surface water
• Ground water	• Topography
• Noise / Sound levels	• Vibration
• Sensitive receptors	• Safety

All potential impacts were then categorised as follows:

The “informed by” section in the table below, were categorised into;

- Known impact (an impact that is known by experience)
- Identified by I&AP’s
- Identified by Specialist (if applicable)

The probability of the impacts were then categorised into;

- Improbable
- Probable and
- Definite

The duration of the impact were then categorised into;

- Short term (impact will cease within 6 months)
- Medium term (impact will cease within 5 years)
- Permanant

Using the above definitions, the identified impacts were classified as either potentially significant or insignificant;

- Insignificant impacts / risks were described but not assessed any further.
- Potentially significant impacts / risks were subjected to further assessment during the Basic Assessment process to determine the significance of the impact / risk in order to assign the appropriate management measures.

Impacts deemed to be potentially significant were assessed further using the Umhlaba Impact Assessment tool as outlined in Section (vi) above and mitigation measures developed accordingly.

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).

The following assessment is the proposed potentially significant impacts based on current knowledge. Should further information be provided by I&AP's that requires inclusion / amendment to the assessment below, this will be updated after the consultation process has been completed.

The complete supporting impact assessment conducted by the EAP is attached as Appendix A.4.

Activity		Aspect	Source / Cause	Impact		Ranking	Controls / Management Measures Implemented				Significance (WITH controls)
Phase	Description of the physical activities that will cause the impacts		Description as to how the activity may cause the impact	A description of the impact that may result from the activity		Significance (WITHOUT controls)	Effective Engineering	Effective Procedural	Effective Training	Effective Monitoring / Maintenance	
1. Literature review	<ul style="list-style-type: none"> Literature review and desktop studies Analysis of results from historical boreholes Determining final location of initial drill site 	Socio-economic	Commencing with prospecting activities over the application area.	Potential decrease in property values Altering of the sense of place of the local area.	Neg	Medium	No	Yes	No	Yes	Medium
2 & 3. Initial drilling and infill drilling	Drilling (access track, drill pad, drilling, stores, security, core cutting, sampling, waste & sanitation)	Air quality	Dust entrainment from; stripping activities, using access tracks, implementing drilling and exhaust emissions	Dust fallout from prospecting activities	Neg	Low-Medium	No	Yes	Yes	Yes	Low-Medium
		Noise nuisance	Noise generated from vehicle / drilling operations	increased ambient noise levels	Neg	Medium	No	Yes	Yes	Yes	Low-Medium
		Visual	Drill rig temporarily visible	visible drill rigs	Neg	Low-Medium	No	No	Yes	Yes	Low-Medium
		Water	Pollution of surface water resource through oil spills / spills from chemical toilets impacting on local water course(s)	Pollution of a water resource	Neg	Low-Medium	No	Yes	Yes	Yes	Low-Medium
		Soil	Soil is not stored for rehabilitation requirements / soil is altered through hydrocarbon spills, compaction or erosion	Degradation of soil quality effecting the ease to implement rehabilitation activities	Neg	Low-Medium	No	Yes	No	Yes	Low-Medium
		Fauna / flora (Ecology)	Stripping of flora and impacting on habitats when clearing a drill pad area or creating a new access track.	Destruction of flora and impact on habitats	Neg	Low-Medium	Yes	No	No	No	Low-Medium
		Heritage	Clearing of area for the drill pad may effect a heritage resource.	impacting a heritage resource	Neg	Low	No	Yes	Yes	Yes	Low
		Social	Unauthorised access to land. Lack of consideration of landowners requests. Not rehabilitating land.	Unhappy landowners / land occupiers	Neg	Medium	Yes	Yes	Yes	No	Low-Medium
Concurrent rehabilitation	Concurrent rehabilitation of drill pads upon completion of drilling activities	All environmental aspects and socio-economic impacts on interested and affected parties	Implementation of successful concurrent rehabilitation activities	Reverse the temporary negative impacts associated with the drilling activities.	Pos	Medium	Yes	Yes	No	Yes	Medium
4. Documentation	Resource statement Prefeasibility study Specialist studies Bankable feasibility study Preparation for Mining Authorisation	All environmental aspects and socio-economic impacts on interested and affected parties	Specialist requiring access to properties to complete various studies	Social impacts	Neg	Low	No	Yes	Yes	Yes	Low

k) SUMMARY OF SPECIALIST REPORTS

(This summary must be completed if any specialist reports informed the impact assessment and final site layout process and must be in the following tabular form).

Due to the nature of the proposed activities and the relative environmental and socio-economic sensitivities identified in the receiving environment (see Section 3(iv)), no specialist studies have been commissioned for this application. The impact assessment has been largely informed by land use decision making tools such as the South African National Biodiversity Insititutes BGIS and the National Environmental Screening Tool. The Integrated Development Plan for the City of Matlosana was also used.

l) ENVIRONMENTAL IMPACT STATEMENT

(xi) Summary of the key findings of the environmental impact assessment

The **key findings** from the environmental impact assessment can be summarised as follows;

- The most significant impacts, ranked as **Medium** of higher prior to consideration of management measures is;
 - Noise from drill rigs at the drill sites and vehicles accessing the sites.
 - Social aspects including negative sentiment around prospecting and possible future mining, access to private land and landowner relationships

All negative impacts can be reduced with the implementation of mitigation measures including controls such as engineering, procedural, training and monitoring/maintenance (see Impacts Assessment in Appendix A4). After the implementation of mitigation measures all impacts reduce to either low medium or low.

(xii) Final site map

(Provide a map at an appropriate scale which superimposes the proposed overall activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers. Attach as Appendix A5:).

The site map attached in Appendix A5. provides an indication of the proposed location of undertaking the initial and possible further infill drilling activities.

(xiii) Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives

No alternatives have been considered. The positive and negative impacts listed above are applicable to the proposed activity.

m) PROPOSED IMPACT MANAGEMENT OBJECTIVES AND THE IMPACT MANAGEMENT OUTCOMES FOR INCLUSION IN THE EMPR

(Based on the assessment and where applicable the recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPR as well as for inclusion as conditions of authorisation).

The following management measures are the proposed measures based on current knowledge and assessment. Should further information be provided by I&AP's that requires inclusion / amendment to the proposed management measures below, this will be updated after the consultation process has been completed.

Activity	Aspect	Source / Cause	Impact	Reverability of impact	NEMA Hierarchy	Impact Management Actions		
Phase	<i>Description of the physical activities that will cause the impacts</i>		<i>Description as to how the activity may cause the impact</i>	<i>A description of the impact that may result from the activity</i>		Avoid / Manage / Mitigate (Definitions on page 6.1) Appendix 4(1)(f)(i): Actions to be implemented in order to achieve Impact Management Objectives		
1. Literature review	<ul style="list-style-type: none"> Literature review and desktop studies Analysis of results from historical boreholes Determining final location of initial drill site 	Socio-economic	Commencing with prospecting activities over the application area.	Potential decrease in property values Altering of the sense of place of the local area.	Neg	Yes - impact reverses when prospecting ceases	Manage	<ul style="list-style-type: none"> The final positioning of the drill site will where feasible, adhere to the following minimum distances: <ul style="list-style-type: none"> Ideally maintain 100m away from any occupied house (minimum of at least 50m). Maintain at least 100m away from the closest edge of the water course. Maintain a 50m buffer from any identified wetland (see specialist studies) Maintain at least 50m away from any other structures / heritage sites (see specialist studies) No trees to be cut down Avoid all established termite mounds Prior to commencing any invasive activities a photographic gallery of the current state of the area to be subjected to disturbance must be recorded. Photographs should be taken of: <ul style="list-style-type: none"> Each proposed drill pad The status of existing access routes The status of the environment on planned new access tracks. Any other area subjected to invasive activities. These photographs will be used to prove effective rehabilitation. Existing accommodation in the area to be used for the drillers Only security to be allowed to stay at drill sites on a permanent basis
2 & 3. Initial drilling and infill drilling	Drilling (access track, drill pad, drilling, stores, security, core	Air quality	Dust entrainment from; stripping activities, using access tracks, implementing drilling and exhaust	Dust fallout from prospecting activities	Neg	Yes - impact reverses when drilling stops	Manage	Ensure that the (drill) equipment used has appropriate dust suppression systems. Do not undertake invasive activities if high winds taking dust offsite.

Activity	Aspect	Source / Cause	Impact		Reverability of impact	NEMA Hierarchy	Impact Management Actions
cutting, sampling, waste & sanitation)	Noise nuisance	emissions Noise generated from vehicle / drilling operations	increased ambient noise levels	Neg	Yes - impact reverses when drilling stops	Manage & Mitigate	<ul style="list-style-type: none"> When drilling occurs in an area that can be heard by surrounding residents, drilling activities will be restricted to daylight hours (unless permission to drill for longer is obtained from the closest community). Documented proof of this permission must be maintained. Staff will be supplied with the appropriate PPE. The timing of implementing drilling programme is not set. If necessary certain drill sites can be timed to occur during school terms. This will be confirmed during the pre-drilling consultation.
	Visual	Drill rig temporarily visible	visible drill rigs	Neg	Yes - impact reverses when drilling stops	Manage	<ul style="list-style-type: none"> Inform employees of the no poaching rule Monitoring the undisturbed areas for snares and destroy if found.
	Water	Pollution of surface water resource through oil spills / spills from chemical toilets impacting on local water course(s)	Pollution of a water resource	Neg	Yes - impact reverses when pollution source is removed.	Avoid, Manage & Mitigate	<ul style="list-style-type: none"> Chemical toilets to be provided at the drill site for sanitation requirements. Only well maintained drill rigs with a service history to be used during the drilling campaign At each drill site the drill equipment will be positioned on a plastic lining when not in use to prevent possible spillages. Only biodegradable lubricants will be used during the drilling operations. All chemicals required for the duration of the surface drilling operation will be stored in a sealed container at the established drill site. Spillages of hydrocarbon liquids will be cleaned up immediately and placed in a sealed container and disposed of appropriately. Diesel container / bowser will be housed on a plastic lined area when on site.
	Soil	Soil is not stored for rehabilitation requirements / soil is altered through hydrocarbon spills, compaction or erosion	Degradation of soil quality effecting the ease to implement rehabilitation activities	Neg	Yes - impact reverses once drill sites are rehabilitated.	Manage	<ul style="list-style-type: none"> Drill sites: The following topsoil management measures are applicable for the drill sites and drilling; Each site will only be developed a maximum time of 1 week prior to it being used and only once drilling in the area is confirmed. No drill sites to be created unnecessarily. The topsoil from the area to be drilled will be moved aside and stored next to the drilling operation. Topsoil (top 50cm) and overburden will be kept separate (if applicable). The drill equipment will be on a plastic lining when not in use to ensure that no unnecessary soil pollution will occur. Upon completion of the drilling programme the soil will be returned to the exact area that it was moved from. Overburden will be replaced first followed by topsoil. If a sump is required - the soil moved to dig the sump will be located next to the sump. The sump will be lined with plastic. After completion of drilling, the plastic lining will be removed from the sump and disposed of

Activity	Aspect	Source / Cause	Impact	Reverability of impact	NEMA Hierarchy	Impact Management Actions	
						<p>in a registered landfill site and the soil moved to generate the sump will be replaced.</p> <ul style="list-style-type: none"> Any chemicals stored at the drill site which could pollute soil if spilt will either be stored within a protected container or in the case of a diesel container on a plastic lined area. The plastic lining must be large enough to cope with minor spillages and leaks. Any soil polluted as a result of a hydrocarbon spill will be dug up and disposed of as hazardous waste. <p>Maintenance: The following will be applicable with regards to the carrying out of maintenance;</p> <ul style="list-style-type: none"> Only minor maintenance may occur on-site with use of drip trays and / or on a plastic lining. Major maintenance activities must be undertaken off-site. Any chemical spillages must be cleaned up immediately and be dealt with as hazardous waste. 	
	Fauna / flora (Ecology)	Stripping of flora and impacting on habitats when clearing a drill pad area or creating a new access track.	Destruction of flora and impact on habitats	Neg	Yes - impact reverses once drill sites are rehabilitated.	Avoid & Manage	<ul style="list-style-type: none"> Access route will be developed to avoid any trees or termite mounds if present. Once drilling is completed at a site, concurrent rehabilitation will be implemented.
	Heritage	Clearing of area for the drill pad may effect a heritage resource.	impacting a heritage resource	Neg	Yes - impact reverses when invasive prospecting ceases.	Avoid	Should archaeological artefacts or skeletal material be revealed in the area during development activities, such activities should be halted, and a university or museum notified in order for an investigation and evaluation of the find(s) to take place
	Social	Unauthorised access to land. Lack of consideration of landowners requests. Not rehabilitating land.	Unhappy landowners / land occupiers	Neg	Yes - impact reverses when invasive prospecting ceases.	Avoid & Manage	<ul style="list-style-type: none"> 1 month prior to implementing any drilling the applicable landowner/developer must be re-consulted. Record of consultation must be kept on file Reasonable request from the landowner must be considered and where possible addressed The final positioning of the drill site will where feasible, adhere to the following minimum distances: <ul style="list-style-type: none"> Ideally maintain 100m away from any occupied house (minimum of at least 50m).

Activity		Aspect	Source / Cause	Impact		Reverability of impact	NEMA Hierarchy	Impact Management Actions
2 & 3. Concurrent rehabilitation	Concurrent rehabilitation of drill pads upon completion of drilling activities	All environmental aspects and socio-economic impacts on interested and affected parties	Implementation of successful concurrent rehabilitation activities	Reverse the temporary negative impacts associated with the drilling activities.	Pos	N/A	Manage	<p>After invasive prospecting is complete, the land will be reverted back to its original condition.</p> <ul style="list-style-type: none"> • (New) Access routes: Will be rehabilitated with the aim to return the road to its original state. Existing access routes will be left in the same state they were found. • Drill pads: After drilling has been completed in one area, the drilling team will ensure the site is reverted back to its original by: <ul style="list-style-type: none"> - Removing all infrastructures, such as the drill equipment and the chemical toilet. - Infilling the boreholes as per legal requirements. - Ensure that no foreign matter (waste) is left behind on the drill site. - Refilling the sump required for the drilling activities (if applicable). <p>Initially the plastic lining will be removed and disposed on in a registered landfill site and the soil returned to effectively fill in the sump.</p> <ul style="list-style-type: none"> - The whole drill site will be inspected for any signs of hydrocarbon pollution. Any identified soil which has been polluted as a result of the drilling activities will be removed and disposed of in a registered landfill site. - Any area compacted as a result of the drill rig will be tilled. <ul style="list-style-type: none"> • Upon completion of the drilling programme another set of photographs of the access route and the individual drill site after the implementation of concurrent rehabilitation will act as proof of rehabilitation to its original state / improvement to the original state. • These photographs will be maintained on file. • The applicable landowner will be requested to inspected the rehabilitated drill sites and if willing sign off acceptance of rehabilitation. • Upon completion of the drilling activities, each site will be monitored for the next year on a bi-annual basis to ensure that no environmentally related problems resulting from the drilling activities has occurred and that the drill sites are re-vegetating naturally.
	Resource statement Prefeasibility study Specialist studies Bankable feasibility study Preparation for Mining Authorisation	All environmental aspects and socio-economic impacts on interested and affected parties	Specialist requiring access to properties to complete various studies	Social impacts		Neg	Yes - impact reverses when invasive prospecting ceases.	

Activity		Aspect	Source / Cause	Impact		Reverability of impact	NEMA Hierarchy	Impact Management Actions
4. General Requirements	Administration	Documentation	Management of legally required documents	Legal compliance (in terms of record keeping)	Pos	Have all necessary environmental authorisations on-site that are applicable to the activities being undertaken	Manage	<p>Ensure valid copies of the following documents / authorisations are available on-site at all times (list provided below):</p> <ul style="list-style-type: none"> • The registered prospecting right and associated documents • A copy of the regulation 2(2) plan depicting the prospecting area. • A copy of the approved EMP • Copy of the latest Environmental Performance Audit. • Any EIA authorisation and associated conditions of approval • Copy of water use license application and any conditions of approval • Records of implementing concurrent rehabilitation. • Records of required photographic gallery • Records of all environmental awareness training • Complaint book • A copy of the weekly inspection reports • Records of consultation with interested and affected parties • Records of non-conformances • Vehicle inspection check sheets and vehicle maintenance records
		Handling complaints	Interested and affected parties	Poor relations between KME and interested and affected parties.	Neg			<p>All complaints received by the mine must be recorded. The information recorded must include, but is not limited to:</p> <ul style="list-style-type: none"> • Date of complaint. • Name and contact details of complainant. • Nature / Description of the complaint. • A description as to how the complaint will be addressed. • A proposed target date for rectifying the complaint. • Date when corrective action was implemented (if necessary). • Confirmation / Explanation of feedback provided to the complainant. • A list of any monitoring or follow-up work that is required, including target dates.
		Ongoing consultation with I&AP's	Interested and affected parties	Maintaining a relation between KME and interested and affected parties.	Pos			<ul style="list-style-type: none"> • Maintain a proactive open door policy with all interested and affected parties. • Provide the landowner and surrounding land occupiers and any other interested and affected party an opportunity to discuss the environmental performance of the mine (at least annually) and maintain a record of all communication.
		Training	Training undertaken as per the Environmental Awareness Plan	Improved environmental awareness resulting in reduced impacts due to the occurrence of fewer environmental incidents / correct response to incidents	Pos	Make staff aware of the environmental risks associated with their jobs and how to manage the risks	Avoid & Manage	<ul style="list-style-type: none"> • Prior to the implementation of drilling activities the drilling contractors will undergo environmental awareness training to inform drillers of the sensitivity of; <ul style="list-style-type: none"> - The sensitivity of water courses, wetlands and other ecological features such as termite mounds. - The need to avoid pollution of the soil by ensuring hydrocarbon spills are minimized or if they do occur they are cleaned up. - The need to implement effective waste management (separation of domestic & hazardous waste) - Do not unnecessarily disturb any wildlife - Good behavior in terms of interaction with the land owner and local community when implementing drilling

Activity	Aspect	Source / Cause	Impact	Reverability of impact	NEMA Hierarchy	Impact Management Actions	
5. Emergency Incidents	General			Neg	Avoid emergency incidents	Manage & Mitigate	<ul style="list-style-type: none"> All assembly points must be: <ul style="list-style-type: none"> Clearly labelled, Documented, and Communicated to all employees. Emergency numbers to be displayed at all assembly points. Conduct emergency drills / mock exercises of environmental emergency incidents to practice and perfect response. This will minimise the safety and environment impacts of real emergencies. If this identified deficiencies in the management actions, the relevant procedures will be amended Relevant government / municipal departments will be contacted within 14 days of an emergency incident which has resulted in environmental impacts / pollution. Notifications will be as per the relevant legislation: i.e.: <ul style="list-style-type: none"> As per Section 30 of NEMA, and As per Section 20 of the NWA and Regulation 2(d) of GN704 for impacts on water quality.
	Non conformances	Unplanned incidents	Varied depending on the incident.	Neg			<p>Should an environmental impact occur which is outside the normal operating environmental conditions of the mine (and is not considered an environmental emergency), it can be raised as a non-conformance. Non-conformances can be raised by any employee, customer or interested and affected party. If a non-conformance is raised the mine will:</p> <ul style="list-style-type: none"> Record the non-conformance and undertake the following actions <ul style="list-style-type: none"> Implement corrective action if required. Identify the root cause of the non-conformance. Identify and implement preventative actions to ensure that it does not re-occur. Once all actions and investigations have been completed, it can be documented and signed off.
	Hydrocarbon spills	Pollution of soil, surface and ground water	Large scale spills of hydrocarbons resulting from a ruptured tank	Pollution of soils and potentially off-site water bodies (if storm water flows into water courses) / ground water if spills remain in the soils for extended periods	Neg	Minimise the extent of the spill and clean up spills promptly to limit the scale of the incident	Manage & Mitigate

Activity		Aspect	Source / Cause	Impact		Reverability of impact	NEMA Hierarchy	Impact Management Actions
	Fire		Smoke emissions from a fire	Air pollution as a result of smoke emissions	Neg	Minimise the potential for the spread of fires	Avoid & Manage	<ul style="list-style-type: none"> • The potential for the spread of veld fires will be reduced by: <ul style="list-style-type: none"> - Cutting vegetation from around buildings, and - Removing vegetation from the explosive magazine area. <p>Maintained fire extinguishers will be available within the plant area and in the admin offices. Awareness training will include procedure required to alert emergency services.</p>

n) ASPECTS FOR INCLUSION AS CONDITIONS OF AUTHORISATION

(Any aspects which have not formed part of the EMPr that must be made conditions of the Environmental Authorisation).

KME must apply the following buffer zones to the final positioning of the drill sites;

- 100m buffer from any water resource
- 50m buffer from any identified wetland
- 50m buffer from any occupied infrastructure
- 50m buffer from any identified heritage resource

Landowners and land occupiers must be reconsulted at least 1 month prior to implementing any invasive activities. Any reasonable concerns from the landowner must be considered

o) DESCRIPTION OF ANY ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE

(Which relate to the assessment and mitigation measures proposed).

When considering the uncertainties in this assessment it is important to note that EIA/EMP processes are not an exact science and impacts can only be evaluated on the information that is currently available and through past experience. Due to the fact this application **only** allows for drilling, the physical impacts are anticipated to be restricted and the majority of impacts and appropriate mitigations measures are known.

Whilst no specialist studies have been conducted it is proposed that the available literature and guidance sourced for the baseline section of this report provides enough certainty to evaluate potential impacts on the receiving environment sufficiently. Therefore no knowledge gaps are identified at this time.

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 author's opinion that this application **should** be authorised. No significant impacts will result from the activities proposed. Appropriate mitigation and management measures can be implemented to manage all potential impacts to an acceptable level. If the results from the additional drilling and specialist studies are positive, the socio-economic benefits of future mining operations will be significant.

(ii) Conditions that must be included in the authorisation

(1) Specific conditions to be included into the compilation and approval of EMPr

The following conditions should form part of the authorisation;

The implementation of the environmental management measures contained within this report must form part of the condition of the authorisation. KME must apply the following buffer zones to the final positioning of the drill sites;

- 100m buffer from any water resource
- 50m buffer from any identified wetland
- 50m buffer from any infrastructure
- 50m buffer from any identified heritage resource

Landowners and land occupiers must be reconsulted at least 1 month prior to implementing any invasive activities. Any reasonable concerns from the landowner must be considered.

(2) Rehabilitation requirements

After drilling has been completed in one area, the drilling team will ensure the site is reverted back to its pre-drilling state by carrying out the following:

- Removing all infrastructures, including the drill rig, the temporary shack, the mobile diesel tank, the mobile water tank and the chemical toilet.

- Capping the boreholes as per legal requirements.
- Ensure that no foreign matter is left behind on the drill site.
- Refilling the sump required for the drilling activities. Initially the plastic lining will be removed and disposed on in a registered landfill site and the soil returned to effectively fill in the sump.
- The whole drill site will be inspected for any signs of hydrocarbon pollution. Any identified soil which has been polluted as a result of the drilling activities will be removed and disposed of in a registered landfill site.
- Any area compacted as a result of the drill rig will be loosened and any ruts created by accessing or leaving the site for the drilling activity will be filled in to ensure that no future erosion shall emanate from the site.
- Applicable landowner will be requested to inspect the success of the rehabilitation.

q) PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED

This application is for an Environmental Authorisation of Five years for prospecting activities. If prospecting has not been completed within the 5 year period the applicant will have the opportunity to renew the right for a further 3 years providing for an 8 year time period maximum.

r) UNDERTAKING

(Confirm that the undertaking required to meet the requirements of this section is provided at the end of the EMPr and is applicable to both the Basic assessment report and the Environmental Management Programme report).

An undertaking to meet the requirements of this section is provided at the end of this EMPr.

s) FINANCIAL PROVISION

(State the amount that is required to both manage and rehabilitate the environment in respect of rehabilitation).

R 240 000 has been proposed for financial provision purposes.

(i) Explain how the aforesaid amount was derived

With regards to the additional **R 240 000** proposed for the drilling activities, the following is applicable;

- In reality the rehabilitation requirements of a drill pad forms part of the contractual arrangement between KME and the drilling company employed to implement drilling activities.
- However in order to adhere to the financial provision requirements of the DMR a financial allocation has been provided for rehabilitation requirements of the drill pads. The allocation was calculated based on the split provided in the Table below.

Aspect requiring rehabilitation	Financial allocation
Capping borehole; and Loosening area compacted by drill rig (~24 boreholes @ R 4000.00 each)	R 96 000.00
Removing infrastructure (24 boreholes @ R 500.00 each)	R 12 000.00
Filling sump (24 boreholes @ R 1000.00 each)	R 24 000.00
Cleaning up potential spillages (24 boreholes @ R 2000.00 each)	R 48 000.00
Fixing ruts (24 boreholes @ R 500.00 each)	R 12 000.00
Total	R 192 000.00
Contingency	R 48 000.00
Total for prospecting programme (30 drill sites)	R 240 000.00

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

(Confirm that the amount, is anticipated to be an operating cost and is provided for as such in the Mining work programme, Financial and Technical Competence Report or Prospecting Work Programme as the case may be).

The calculated financial provisioning amount has been provided for as an operation cost in the Prospecting Works Programme submitted as part of the application process.

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

(Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as an Appendix A6: Socio-Economic Assessment.

No specialist investigation was conducted for this application however socio-economic impacts are considered in the impact assessment register based on the information obtained from the Integrated Development Plan for the City of Matlosana. Should specific socio-economic impacts be raised by I&AP's during the consultation period these will be included in the updated assessment of impacts already identified when finalising the report.

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

(Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) with the exception of the national estate contemplated in section 3(2)(i)(vi) and (vii) of that Act, attach the investigation report as Appendix A7: Heritage Assessment and confirm that the applicable mitigation is reflected in ~~2.5.3; 2.11.6. and 2.12.~~ the EMP Report² herein).

Nationally owned infrastructure and land has been identified in previous sections of this report. Infrastructure such as the N12 and the railway will be avoided completely. No known cultural or heritage interests have been identified within the application area however management measures have been included to avoid or mitigate any cultural or heritage interests that may be discovered during the implementation of the proposed activities.

u) OTHER MATTERS REQUIRED IN TERMS OF SECTION 24(4)(A) AND (B) OF THE ACT

(The EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in sub-regulation 22(2)(h), exist. The EAP must attach such motivation as an Appendix A8: Motivation).

With reference to Section 24(4)(b)(i), no alternatives have been considered as the site layout proposed in Appendix A2 is defined by the available geological information and historical mining results pertaining to the application area.

² The template provided on the DMR website has reference to numbered sections of this report that do not exist and hence have been crossed out and amended by underlined text.

PART B:
ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1. DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

This environmental management programme report have been compiled in line with the template provided by the Department of Minerals and Resources. However to assist in the implementation of the required management measures, an implementation plan which only provides the mitigation measures is contained in **Appendix B3**

a) DETAILS OF THE EAP

(Confirm that the requirement for the provision of the details and expertise of the EAP are already included in PART A, section ~~1(a)~~3(a)³ herein as required).

The requirement for the provision of the details and expertise of the EAP are already included in PART A, Section 3(a).

b) DESCRIPTION OF THE ASPECTS OF THE ACTIVITY

(Confirm that the requirement to describe the aspects of the activity that are covered by the draft environmental management programme is already included in PART A, section (3)(h) herein as required d).

The requirement to describe the aspects of the activity that are covered by the draft environmental management programme is already included in PART A, Section 3(d).

c) COMPOSITE MAP

(Provide a map (attached in Appendix B1: composite maps showing Environmental Sensitivity) at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that any areas that should be avoided, including buffers).

A composite map illustrating the environmental sensitivity of the site is given in Appendix B.1.

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 in the baseline environment herein).

The closure objectives for the activities contained within this application is to revert any land impacted by drilling activities to the same condition prior to drilling having taken place .

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

A water use license will not be required for the implementation of a drilling campaign. All water required for drilling will be obtained from a pre-existing legal source.

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

A water use license will not be required for the implementation of a drilling campaign. All water required for drilling will be obtained from a pre-existing legal source.

³ The template provided on the DMR website has an error in the reference to a former section of this report. This has been crossed out and amended by underlined text.

(iv) Impacts to be mitigated in their respective phases

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

Activity	Aspect	Source / Cause	Impact	Impact Management Actions	Timeframe	Compliance	
Phase	Description of the physical activities that will cause the impacts	Description as to how the activity may cause the impact	A description of the impact that may result from the activity	Appendix 4(1)(f)(i): Actions to be implemented in order to achieve Impact Management Objectives	Appendix 4(1)(i): Time period for Implementation of Impact Management Actions	Appendix 4(1)(f)(ii): Environmental Management Standards / Practices	
1. Literature review	<ul style="list-style-type: none"> Literature review and desktop studies Analysis of results from historical boreholes Determining final location of initial drill site 	Socio-economic	Commencing with prospecting activities over the application area.	Potential decrease in property values Altering of the sense of place of the local area.	Neg <ul style="list-style-type: none"> The final positioning of the drill site will where feasible, adhere to the following minimum distances: <ul style="list-style-type: none"> Ideally maintain 100m away from any occupied house (minimum of at least 50m). Maintain at least 100m away from the closest edge of the water course. Maintain a 50m buffer from any identified wetland (see specialist studies) Maintain at least 50m away from any other structures / heritage sites (see specialist studies) No trees to be cut down Avoid all established termite mounds Prior to commencing any invasive activities a photographic gallery of the current state of the area to be subjected to disturbance must be recorded. Photographs should be taken of: <ul style="list-style-type: none"> Each proposed drill pad The status of existing access routes The status of the environment on planned new access tracks. Any other area subjected to invasive activities. These photographs will be used to prove effective rehabilitation. Existing accommodation in the area to be used for the drillers Only security to be allowed to stay at drill sites on a permanent basis 	Throughout planning phase	NA
2&3. Initial drilling & Infill drilling	Drilling (access track, drill pad, drilling, stores, security, core cutting, sampling, waste & sanitation)	Air quality	Dust entrainment from; stripping activities, using access tracks, implementing drilling and exhaust emissions	Dust fallout from prospecting activities	Neg <ul style="list-style-type: none"> Ensure that the (drill) equipment used has appropriate dust suppression systems. Do not undertake invasive activities if high winds taking dust offsite. 	Throughout operational phase	NEM:AQA, GN827
		Noise nuisance	Noise generated from vehicle / drilling operations	increased ambient noise levels	Neg <ul style="list-style-type: none"> When drilling occurs in an area that can be heard by surrounding residents, drilling activities will be restricted to daylight hours (unless permission to drill for longer is obtained from the closest community). Documented proof of this permission must be maintained. Staff will be supplied with the appropriate PPE. The timing of implementing drilling programme is not set. If necessary certain drill sites can be timed to occur during school terms. This will be confirmed during the pre-drilling consultation. 	Throughout operational phase	ECA, NEM:AQA, SANS 10103
		Visual	Drill rig temporarily visible	visible drill rigs	Neg <ul style="list-style-type: none"> Inform employees of the no poaching rule Monitoring the undisturbed areas for snares and destroy if found. 	Throughout operational phase	NA
		Water	Pollution of surface water resource through oil spills / spills from chemical toilets impacting on local water course(s)	Pollution of a water resource	Neg <ul style="list-style-type: none"> Chemical toilets to be provided at the drill site for sanitation requirements. Only well maintained drill rigs with a service history to be used during the drilling campaign At each drill site the drill equipment will be positioned on a plastic lining when not in use to prevent possible spillages. Only biodegradable lubricants will be used during the drilling operations. All chemicals required for the duration of the surface drilling operation will be stored in a sealed container at the established drill site. <ul style="list-style-type: none"> Spillages of hydrocarbon liquids will be cleaned up immediately and placed in a sealed container and disposed of appropriately. Diesel container / bowser will be housed on a plastic lined area when on site. 	Throughout operational phase	NWA, GN 704
		Soil	Soil is not stored for rehabilitation requirements / soil is altered through hydrocarbon spills, compaction or erosion	Degradation of soil quality effecting the ease to implement rehabilitation activities	Neg <ul style="list-style-type: none"> Drill sites: The following topsoil management measures are applicable for the drill sites and drilling; <ul style="list-style-type: none"> Each site will only be developed a maximum time of 1 week prior to it being used and only once drilling in the area is confirmed. No drill sites to be created unnecessarily. The topsoil from the area to be drilled will be moved aside and stored next to the drilling operation. Topsoil (top 50cm) and overburden will be kept separate (if applicable). The drill equipment will be on a plastic lining when not in use to ensure that no unnecessary soil pollution will occur. Upon completion of the drilling programme the soil will be returned to the exact area that it was moved 	Throughout operational phase	CARA

Activity	Aspect	Source / Cause	Impact	Impact Management Actions	Timeframe	Compliance	
				<p>from. Overburden will be replaced first followed by topsoil.</p> <ul style="list-style-type: none"> • If a sump is required - the soil moved to dig the sump will be located next to the sump. The sump will be lined with plastic. After completion of drilling, the plastic lining will be removed from the sump and disposed of in a registered landfill site and the soil moved to generate the sump will be replaced. • Any chemicals stored at the drill site which could pollute soil if spilt will either be stored within a protected container or in the case of a diesel container on a plastic lined area. - The plastic lining must be large enough to cope with minor spillages and leaks. • Any soil polluted as a result of a hydrocarbon spill will be dug up and disposed of as hazardous waste. <p>Maintenance: The following will be applicable with regards to the carrying out of maintenance;</p> <ul style="list-style-type: none"> • Only minor maintenance may occur on-site with use of drip trays and / or on a plastic lining. • Major maintenance activities must be undertaken off-site. • Any chemical spillages must be cleaned up immediately and be dealt with as hazardous waste. 			
	Fauna / flora (Ecology)	Stripping of flora and impacting on habitats when clearing a drill pad area or creating a new access track.	Destruction of flora and impact on habitats	Neg	<ul style="list-style-type: none"> • Access route will be developed to avoid any trees or termite mounds if present. • Once drilling is completed at a site, concurrent rehabilitation will be implemented. 	Throughout operational phase	NA
	Heritage	Clearing of area for the drill pad may effect a heritage resource.	impacting a heritage resource	Neg	Should archaeological artefacts or skeletal material be revealed in the area during development activities, such activities should be halted, and a university or museum notified in order for an investigation and evaluation of the find(s) to take place	Throughout operational phase	NHRA
	Social	Unauthorised access to land. Lack of consideration of landowners requests. Not rehabilitating land.	Unhappy landowners / land occupiers	Neg	<ul style="list-style-type: none"> • 1 month prior to implementing any drilling the applicable landowner/developer must be re-consulted. • Record of consultation must be kept on file • Reasonable request from the landowner must be considered and where possible addressed <ul style="list-style-type: none"> • The final positioning of the drill site will where feasible, adhere to the following minimum distances: <ul style="list-style-type: none"> - Ideally maintain 100m away from any occupied house (minimum of at least 50m). 	Throughout operational phase	NA

	Activity	Aspect	Source / Cause	Impact		Impact Management Actions	Timeframe	Compliance
2&3. Concurrent rehabilitation	Concurrent rehabilitation of drill pads upon completion of drilling activities	All environmental aspects and socio-economic impacts on interested and affected parties	Implementation of successful concurrent rehabilitation activities	Reverse the temporary negative impacts associated with the drilling activities.	Pos	<p>After invasive prospecting is complete, the land will be reverted back to its original condition.</p> <ul style="list-style-type: none"> • (New) Access routes: Will be rehabilitated with the aim to return the road to its original state. Existing access routes will be left in the same state they were found. • Drill pads: After drilling has been completed in one area, the drilling team will ensure the site is reverted back to its original by: <ul style="list-style-type: none"> - Removing all infrastructures, such as the drill equipment and the chemical toilet. - Infilling the boreholes as per legal requirements. - Ensure that no foreign matter (waste) is left behind on the drill site. - Refilling the sump required for the drilling activities (if applicable). Initially the plastic lining will be removed and disposed on in a registered landfill site and the soil returned to effectively fill in the sump. - The whole drill site will be inspected for any signs of hydrocarbon pollution. Any identified soil which has been polluted as a result of the drilling activities will be removed and disposed of in a registered landfill site. - Any area compacted as a result of the drill rig will be tilled. • Upon completion of the drilling programme another set of photographs of the access route and the individual drill site after the implementation of concurrent rehabilitation will act as proof of rehabilitation to its original state / improvement to the original state. • These photographs will be maintained on file. • The applicable landowner will be requested to inspected the rehabilitated drill sites and if willing sign off acceptance of rehabilitation. • Upon completion of the drilling activities, each site will be monitored for the next year on a bi-annual basis to ensure that no environmentally related problems resulting from the drilling activities has occurred and that the drill sites are re-vegetating naturally. 	Throughout operational phase	NEM:BA, CARA
4. Documentation	Resource statement Prefeasibility study Specialist studies Bankable feasibility study Preparation for Mining Authorisation	All environmental aspects and socio-economic impacts on interested and affected parties	Specialist requiring access to properties to complete various studies	Social impacts	Neg	<ul style="list-style-type: none"> • Prior to commencing with the site visit of any specialist study, the affected landowner needs to be re-consulted. During this re-consulting the landowner needs to be made aware of the following; <ul style="list-style-type: none"> o Date that the specialist intends to access the land o Duration that the specialist will require on the land o Details of any person who will form part of the specialist team o Details of the activity the specialist will undertake on the property • All reasonable requests from the landowner (during the consultation) must be implemented • The applicable landowner should be provided / informed of the outcomes of the specialist study once completed. 		
4. General Requirements	- Administration	Documentation	Management of legally required documents	Legal compliance (in terms of record keeping)	Pos	<p>Ensure valid copies of the following documents / authorisations are available on-site at all times (list provided below):</p> <ul style="list-style-type: none"> • The registered prospecting right and associated documents • A copy of the regulation 2(2) plan depicting the prospecting area. • A copy of the approved EMP • Copy of the latest Environmental Performance Audit. • Any EIA authorisation and associated conditions of approval • Copy of water use license application and any conditions of approval • Records of implementing concurrent rehabilitation. • Records of required photographic gallery • Records of all environmental awareness training • Complaint book • A copy of the weekly inspection reports • Records of consultation with interested and affected parties • Records of non-conformances • Vehicle inspection check sheets and vehicle maintenance records 	While the prospecting right is valid.	As per authorisation
		Handling complaints	Interested and affected parties	Poor relations between KME and interested and affected parties.	Neg	<p>All complaints received by the mine must be recorded. The information recorded must include, but is not limited to:</p> <ul style="list-style-type: none"> • Date of complaint. • Name and contact details of complainant. • Nature / Description of the complaint. • A description as to how the complaint will be addressed. • A proposed target date for rectifying the complaint. • Date when corrective action was implemented (if necessary). • Confirmation / Explanation of feedback provided to the complainant. • A list of any monitoring or follow-up work that is required, including target dates. 	Throughout operational phase	NA

Activity	Aspect	Source / Cause	Impact	Impact Management Actions	Timeframe	Compliance	
	Ongoing consultation with I&AP's	Interested and affected parties	Maintaining a relation between KME and interested and affected parties.	Pos <ul style="list-style-type: none"> • Maintain a proactive open door policy with all interested and affected parties. • Provide the landowner and surrounding land occupiers and any other interested and affected party an opportunity to discuss the environmental performance of the mine (at least annually) and maintain a record of all communication. 	Throughout operational phase	NA	
	Training	Training undertaken as per the Environmental Awareness Plan	Improved environmental awareness resulting in reduced impacts due to the occurrence of fewer environmental incidents / correct response to incidents	Pos <ul style="list-style-type: none"> • Prior to the implementation of drilling activities the drilling contractors will undergo environmental awareness training to inform drillers of the sensitivity of; - The sensitivity of water courses, wetlands and other ecological features such as termite mounds. - The need to avoid pollution of the soil by ensuring hydrocarbon spills are minimized or if they do occur they are cleaned up. - The need to implement effective waste management (separation of domestic & hazardous waste) - Do not unnecessarily disturb any wildlife - Good behavior in terms of interaction with the land owner and local community when implementing drilling 	As per the EAP	NEMA	
5. Emergency Incidents	General			Neg <ul style="list-style-type: none"> • All assembly points must be: <ul style="list-style-type: none"> - Clearly labelled, - Documented, and - Communicated to all employees. • Emergency numbers to be displayed at all assembly points. • Conduct emergency drills / mock exercises of environmental emergency incidents to practice and perfect response. This will minimise the safety and environment impacts of real emergencies. If this identified deficiencies in the management actions, the relevant procedures will be amended • Relevant government / municipal departments will be contacted within 14 days of an emergency incident which has resulted in environmental impacts / pollution. Notifications will be as per the relevant legislation: i.e.: <ul style="list-style-type: none"> - As per Section 30 of NEMA, and - As per Section 20 of the NWA and Regulation 2(d) of GN704 for impacts on water quality. 	Immediately stop source Within 24 hours of incident Within 14 days of incident	NEMA, S30 NWA, S20	
	Non conformances	Unplanned incidents	Varied depending on the incident.	Neg <p>Should an environmental impact occur which is outside the normal operating environmental conditions of the mine (and is not considered an environmental emergency), it can be raised as a non-conformance. Non-conformances can be raised by any employee, customer or interested and affected party. If a non-conformance is raised the mine will:</p> <ul style="list-style-type: none"> • Record the non-conformance and undertake the following actions - Implement corrective action if required. - Identify the root cause of the non-conformance. - Identify and implement preventative actions to ensure that it does not re-occur. - Once all actions and investigations have been completed, it can be documented and signed off. 	Throughout operational phase	NA	
	Hydrocarbon spills	Pollution of soil, surface and ground water	Large scale spills of hydrocarbons resulting from a ruptured tank	Pollution of soils and potentially off-site water bodies (if storm water flows into water courses) / ground water if spills remain in the soils for extended periods	Neg <ul style="list-style-type: none"> Stop the source of the spill 'Contain the spill (utilising fine material on-site or material from the spill kits), Lift all contaminated "soils", and Dispose (at a licenced hazardous disposal facility) or bioremediation (at a licenced facility) contaminated "soils" Report the incident to the authorities 	Immediately stop source Within 24 hours of incident Within 14 days of incident	NEMA, S30 NWA, S20
	Fire		Smoke emissions from a fire	Air pollution as a result of smoke emissions	Neg <ul style="list-style-type: none"> • The potential for the spread of veld fires will be reduced by: <ul style="list-style-type: none"> - Cutting vegetation from around buildings, and - Removing vegetation from the explosive magazine area. Maintained fire extinguishers will be available within the plant area and in the admin offices. Awareness training will include procedure required to alert emergency services. 	Daily during the Life of Mine	Veld fire act

e) IMPACT MANAGEMENT OUTCOMES

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

Phase	Activity	Aspect	Source / Cause	Impact	Impact Management Actions	Impact Management Outcomes	Compliance
	Description of the physical activities that will cause the impacts		Description as to how the activity may cause the impact	A description of the impact that may result from the activity	Appendix 4(1)(f)(i): Actions to be implemented in order to achieve Impact Management Objectives	Appendix 4(1)(d): A description of the impact management outcomes.	Appendix 4(1)(f)(ii): Environmental Management Standards / Practices
1. Literature review	<ul style="list-style-type: none"> Literature review and desktop studies Analysis of results from historical boreholes Determining final location of initial drill site 	Socio-economic	Commencing with prospecting activities over the application area.	Potential decrease in property values Altering of the sense of place of the local area.	<p>Neg</p> <ul style="list-style-type: none"> The final positioning of the drill site will where feasible, adhere to the following minimum distances: <ul style="list-style-type: none"> Ideally maintain 100m away from any occupied house (minimum of at least 50m). Maintain at least 100m away from the closest edge of the water course. Maintain a 50m buffer from any identified wetland (see specialist studies) Maintain at least 50m away from any other structures / heritage sites (see specialist studies) No trees to be cut down Avoid all established termite mounds Prior to commencing any invasive activities a photographic gallery of the current state of the area to be subjected to disturbance must be recorded. Photographs should be taken of: <ul style="list-style-type: none"> Each proposed drill pad The status of existing access routes The status of the environment on planned new access tracks. Any other area subjected to invasive activities. These photographs will be used to prove effective rehabilitation. Existing accommodation in the area to be used for the drillers Only security to be allowed to stay at drill sites on a permanent basis 	Optimal utilisation of mineral resources that minimises impacts on the natural, social and economic environments.	NA
2&3. Initial drilling & Infill drilling	Drilling (access track, drill pad, drilling, stores, security, core cutting, sampling, waste & sanitation)	Air quality	Dust entrainment from; stripping activities, using access tracks, implementing drilling and exhaust emissions	Dust fallout from prospecting activities	<p>Neg</p> <ul style="list-style-type: none"> Ensure that the (drill) equipment used has appropriate dust suppression systems. Do not undertake invasive activities if high winds taking dust offsite. 	Off-site dust fallout rates are below the residential / non-residential standard (as applicable) On-site dust fallout rates are below the site specific target	NEM:AQA, GN827
		Noise nuisance	Noise generated from vehicle / drilling operations	increased ambient noise levels	<p>Neg</p> <ul style="list-style-type: none"> When drilling occurs in an area that can be heard by surrounding residents, drilling activities will be restricted to daylight hours (unless permission to drill for longer is obtained from the closest community). Documented proof of this permission must be maintained. Staff will be supplied with the appropriate PPE. The timing of implementing drilling programme is not set. If necessary certain drill sites can be timed to occur during school terms. This will be confirmed during the pre-drilling consultation. 	Noise levels emanating from prospecting activities are kept below the acceptable standard	ECA, NEM:AQA, SANS 10103
		Visual	Drill rig temporarily visible	visible drill rigs	<p>Neg</p> <ul style="list-style-type: none"> Inform employees of the no poaching rule Monitoring the undisturbed areas for snares and destroy if found. 	The visual appearance of the drilling sites is kept neat and tidy	NA
		Water	Pollution of surface water resource through oil spills / spills from chemical toilets impacting on local water course(s)	Pollution of a water resource	<p>Neg</p> <ul style="list-style-type: none"> Chemical toilets to be provided at the drill site for sanitation requirements. Only well maintained drill rigs with a service history to be used during the drilling campaign At each drill site the drill equipment will be positioned on a plastic lining when not in use to prevent possible spillages. Only biodegradable lubricants will be used during the drilling operations. All chemicals required for the duration of the surface drilling operation will be stored in a sealed container at the established drill site. <ul style="list-style-type: none"> Spillages of hydrocarbon liquids will be cleaned up immediately and placed in a sealed container and disposed of appropriately. Diesel container / bowser will be housed on a plastic lined area when on site. 	Hydrocarbons entering any water source is limited or avoided altogether	NWA, GN 704

Activity	Aspect	Source / Cause	Impact	Impact Management Actions	Impact Management Outcomes	Compliance
	Soil	Soil is not stored for rehabilitation requirements / soil is altered through hydrocarbon spills, compaction or erosion	Degradation of soil quality effecting the ease to implement rehabilitation activities	<p>Neg</p> <p>Drill sites: The following topsoil management measures are applicable for the drill sites and drilling;</p> <ul style="list-style-type: none"> • Each site will only be developed a maximum time of 1 week prior to it being used and only once drilling in the area is confirmed. No drill sites to be created unnecessarily. • The topsoil from the area to be drilled will be moved aside and stored next to the drilling operation. • Topsoil (top 50cm) and overburden will be kept separate (if applicable). • The drill equipment will be on a plastic lining when not in use to ensure that no unnecessary soil pollution will occur. Upon completion of the drilling programme the soil will be returned to the exact area that it was moved from. Overburden will be replaced first followed by topsoil. • If a sump is required - the soil moved to dig the sump will be located next to the sump. The sump will be lined with plastic. After completion of drilling, the plastic lining will be removed from the sump and disposed of in a registered landfill site and the soil moved to generate the sump will be replaced. • Any chemicals stored at the drill site which could pollute soil if spilt will either be stored within a protected container or in the case of a diesel container on a plastic lined area. - The plastic lining must be large enough to cope with minor spillages and leaks. • Any soil polluted as a result of a hydrocarbon spill will be dug up and disposed of as hazardous waste. <p>Maintenance: The following will be applicable with regards to the carrying out of maintenance;</p> <ul style="list-style-type: none"> • Only minor maintenance may occur on-site with use of drip trays and / or on a plastic lining. • Major maintenance activities must be undertaken off-site. • Any chemical spillages must be cleaned up immediately and be dealt with as hazardous waste. 	Compaction and degradation are limited. Hydrocarbons entering the soil is limited or avoided altogether.	CARA
	Fauna / flora (Ecology)	Stripping of flora and impacting on habitats when clearing a drill pad area or creating a new access track.	Destruction of flora and impact on habitats	<p>Neg</p> <ul style="list-style-type: none"> • Access route will be developed to avoid any trees or termite mounds if present. • Once drilling is completed at a site, concurrent rehabilitation will be implemented. 	Sensitive areas are identified before invasive activities are undertaken and these areas are avoided. Areas disturbed by invasive activities are restored to resemble the area before activities commenced.	NA
	Heritage	Clearing of area for the drill pad may effect a heritage resource.	impacting a heritage resource	<p>Neg</p> <p>Should archaeological artefacts or skeletal material be revealed in the area during development activities, such activities should be halted, and a university or museum notified in order for an investigation and evaluation of the find(s) to take place</p>	No cultural / heritage site is destroyed or damaged by prospecting activities.	NHRA
	Social	Unauthorised access to land. Lack of consideration of landowners requests. Not rehabilitating land.	Unhappy landowners / land occupiers	<p>Neg</p> <ul style="list-style-type: none"> • 1 month prior to implementing any drilling the applicable landowner/developer must be re-consulted. • Record of consultation must be kept on file • Reasonable request from the landowner must be considered and where possible addressed <ul style="list-style-type: none"> • The final positioning of the drill site will where feasible, adhere to the following minimum distances: <ul style="list-style-type: none"> - Ideally maintain 100m away from any occupied house (minimum of at least 50m). 	Prospecting activities are undertaken in agreement with the landowner so as not to jeopardise current or future landuses. Good relations maintained landowners.	NA

Activity	Aspect	Source / Cause	Impact	Impact Management Actions	Impact Management Outcomes	Compliance
2&3. Concurrent rehabilitation Concurrent rehabilitation of drill pads upon completion of drilling activities	All environmental aspects and socio-economic impacts on interested and affected parties	Implementation of successful concurrent rehabilitation activities	Reverse the temporary negative impacts associated with the drilling activities.	Pos After invasive prospecting is complete, the land will be reverted back to its original condition. • (New) Access routes: Will be rehabilitated with the aim to return the road to its original state. Existing access routes will be left in the same state they were found. • Drill pads: After drilling has been completed in one area, the drilling team will ensure the site is reverted back to its original by: - Removing all infrastructures, such as the drill equipment and the chemical toilet. - Infilling the boreholes as per legal requirements. - Ensure that no foreign matter (waste) is left behind on the drill site. - Refilling the sump required for the drilling activities (if applicable). Initially the plastic lining will be removed and disposed on in a registered landfill site and the soil returned to effectively fill in the sump. - The whole drill site will be inspected for any signs of hydrocarbon pollution. Any identified soil which has been polluted as a result of the drilling activities will be removed and disposed of in a registered landfill site. - Any area compacted as a result of the drill rig will be tilled. • Upon completion of the drilling programme another set of photographs of the access route and the individual drill site after the implementation of concurrent rehabilitation will act as proof of rehabilitation to its original state / improvement to the original state. • These photographs will be maintained on file. • The applicable landowner will be requested to inspect the rehabilitated drill sites and if willing sign off acceptance of rehabilitation. • Upon completion of the drilling activities, each site will be monitored for the next year on a bi-annual basis to ensure that no environmentally related problems resulting from the drilling activities has occurred and that the drill sites are re-vegetating naturally.	The drill sites are returned to a state that will support a predetermined future use.	NEM:BA, CARA
4. Documentation Resource statement Prefeasibility study Specialist studies Bankable feasibility study Preparation for Mining Authorisation	All environmental aspects and socio-economic impacts on interested and affected parties	Specialist requiring access to properties to complete various studies	Social impacts	Neg • Prior to commencing with the site visit of any specialist study, the affected landowner needs to be re-consulted. During this re-consulting the landowner needs to be made aware of the following: o Date that the specialist intends to access the land o Duration that the specialist will require on the land o Details of any person who will form part of the specialist team o Details of the activity the specialist will undertake on the property • All reasonable requests from the landowner (during the consultation) must be implemented • The applicable landowner should be provided / informed of the outcomes of the specialist study once completed.		
4. General Requirements - Administration	Documentation	Management of legally required documents	Legal compliance (in terms of record keeping)	Pos Ensure valid copies of the following documents / authorisations are available on-site at all times (list provided below): • The registered prospecting right and associated documents • A copy of the regulation 2(2) plan depicting the prospecting area. • A copy of the approved EMP • Copy of the latest Environmental Performance Audit. • Any EIA authorisation and associated conditions of approval • Copy of water use license application and any conditions of approval • Records of implementing concurrent rehabilitation. • Records of required photographic gallery • Records of all environmental awareness training • Complaint book • A copy of the weekly inspection reports • Records of consultation with interested and affected parties • Records of non-conformances • Vehicle inspection check sheets and vehicle maintenance records	Valid environmental authorisations applicable to the activities being undertaken on-site	As per authorisation

Activity	Aspect	Source / Cause	Impact	Impact Management Actions	Impact Management Outcomes	Compliance	
	Handling complaints	Interested and affected parties	Poor relations between KME and interested and affected parties.	Neg	<ul style="list-style-type: none"> All complaints received by the mine must be recorded. The information recorded must include, but is not limited to: <ul style="list-style-type: none"> • Date of complaint. • Name and contact details of complainant. • Nature / Description of the complaint. • A description as to how the complaint will be addressed. • A proposed target date for rectifying the complaint. • Date when corrective action was implemented (if necessary). • Confirmation / Explanation of feedback provided to the complainant. • A list of any monitoring or follow-up work that is required, including target dates. 	Active communication with I&AP's resulting in potential issues being solved timeously.	NA
	Ongoing consultation with I&AP's	Interested and affected parties	Maintaining a relation between KME and interested and affected parties.	Pos	<ul style="list-style-type: none"> • Maintain a proactive open door policy with all interested and affected parties. • Provide the landowner and surrounding land occupiers and any other interested and affected party an opportunity to discuss the environmental performance of the mine (at least annually) and maintain a record of all communication. 	Active communication with I&AP's resulting in potential issues being solved timeously.	NA
	Training	Training undertaken as per the Environmental Awareness Plan	Improved environmental awareness resulting in reduced impacts due to the occurrence of fewer environmental incidents / correct response to incidents	Pos	<ul style="list-style-type: none"> • Prior to the implementation of drilling activities the drilling contractors will undergo environmental awareness training to inform drillers of the sensitivity of: <ul style="list-style-type: none"> - The sensitivity of water courses, wetlands and other ecological features such as termite mounds. - The need to avoid pollution of the soil by ensuring hydrocarbon spills are minimized or if they do occur they are cleaned up. - The need to implement effective waste management (separation of domestic & hazardous waste) - Do not unnecessarily disturb any wildlife - Good behavior in terms of interaction with the land owner and local community when implementing drilling 	Improved environmental awareness resulting in reduced impacts due to the occurrence of fewer environmental incidents / correct response to incidents	NEMA
5. Emergency Incidents	General			Neg	<ul style="list-style-type: none"> • All assembly points must be: <ul style="list-style-type: none"> - Clearly labelled, - Documented, and - Communicated to all employees. • Emergency numbers to be displayed at all assembly points. • Conduct emergency drills / mock exercises of environmental emergency incidents to practice and perfect response. This will minimise the safety and environment impacts of real emergencies. If this identified deficiencies in the management actions, the relevant procedures will be amended • Relevant government / municipal departments will be contacted within 14 days of an emergency incident which has resulted in environmental impacts / pollution. Notifications will be as per the relevant legislation: i.e.: <ul style="list-style-type: none"> - As per Section 30 of NEMA, and - As per Section 20 of the NWA and Regulation 2(d) of GN704 for impacts on water quality. 	Facilitate a fast response to an emergency incident	NEMA, S30 NWA, S20
	Non conformances	Unplanned incidents	Varied depending on the incident.	Neg	<ul style="list-style-type: none"> Should an environmental impact occur which is outside the normal operating environmental conditions of the mine (and is not considered an environmental emergency), it can be raised as a non-conformance. Non-conformances can be raised by any employee, customer or interested and affected party. If a non-conformance is raised the mine will: <ul style="list-style-type: none"> • Record the non-conformance and undertake the following actions <ul style="list-style-type: none"> - Implement corrective action if required. - Identify the root cause of the non-conformance. - Identify and implement preventative actions to ensure that it does not re-occur. - Once all actions and investigations have been completed, it can be documented and signed off. 	Effective management of any impacts that are not specifically managed by mitigation measures specified in the EMPr.	NA
	Hydrocarbon spills	Pollution of soil, surface and ground water	Large scale spills of hydrocarbons resulting from a ruptured tank	Pollution of soils and potentially off-site water bodies (if storm water flows into water courses) / ground water if spills remain in the soils for extended periods	Neg	<ul style="list-style-type: none"> Stop the source of the spill 'Contain the spill (utilising fine material on-site or material from the spill kits), Lift all contaminated "soils", and Dispose (at a licenced hazardous disposal facility) or bioremediation (at a licenced facility) contaminated "soils" Report the incident to the authorities 	Pollution is confined to the incident area

Activity	Aspect	Source / Cause	Impact	Impact Management Actions	Impact Management Outcomes	Compliance
Fire		Smoke emissions from a fire	Air pollution as a result of smoke emissions	<p>Neg</p> <ul style="list-style-type: none"> The potential for the spread of veld fires will be reduced by: <ul style="list-style-type: none"> - Cutting vegetation from around buildings, and - Removing vegetation from the explosive magazine area. <p>Maintained fire extinguishers will be available within the plant area and in the admin offices. Awareness training will include procedure required to alert emergency services.</p>	Fires that start in the plant area on-site will be contained	Veld fire act

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) (d) and (e)⁴ will be achieved).

Phase	Activity	Aspect	Source / Cause	Impact	Impact Management Actions	Impact Management Outcomes	Timeframe	Compliance
	Description of the physical activities that will cause the impacts		Description as to how the activity may cause the impact	A description of the impact that may result from the activity	Appendix 4(1)(f)(i): Actions to be implemented in order to achieve Impact Management Objectives	Appendix 4(1)(d): A description of the impact management outcomes.	Appendix 4(1)(i): Time period for Implementation of Impact Management Actions	Appendix 4(1)(f)(ii): Environmental Management Standards / Practices
1. Literature review	<ul style="list-style-type: none"> Literature review and desktop studies Analysis of results from historical boreholes Determining final location of initial drill site 	Socio-economic	Commencing with prospecting activities over the application area.	Potential decrease in property values Altering of the sense of place of the local area.	Neg <ul style="list-style-type: none"> The final positioning of the drill site will where feasible, adhere to the following minimum distances: <ul style="list-style-type: none"> Ideally maintain 100m away from any occupied house (minimum of at least 50m). Maintain at least 100m away from the closest edge of the water course. Maintain a 50m buffer from any identified wetland (see specialist studies) Maintain at least 50m away from any other structures / heritage sites (see specialist studies) No trees to be cut down Avoid all established termite mounds Prior to commencing any invasive activities a photographic gallery of the current state of the area to be subjected to disturbance must be recorded. Photographs should be taken of: <ul style="list-style-type: none"> Each proposed drill pad The status of existing access routes The status of the environment on planned new access tracks. Any other area subjected to invasive activities. These photographs will be used to prove effective rehabilitation. Existing accommodation in the area to be used for the drillers Only security to be allowed to stay at drill sites on a permanent basis 	Optimal utilisation of mineral resources that minimises impacts on the natural, social and economic environments.	Throughout planning phase	NA
2&3. Initial drilling & Infill drilling	Drilling (access track, drill pad, drilling, stores, security, core cutting, sampling, waste & sanitation)	Air quality	Dust entrainment from; stripping activities, using access tracks, implementing drilling and exhaust emissions	Dust fallout from prospecting activities	Neg <ul style="list-style-type: none"> Ensure that the (drill) equipment used has appropriate dust suppression systems. Do not undertake invasive activities if high winds taking dust offsite. 	Off-site dust fallout rates are below the residential / non-residential standard (as applicable) On-site dust fallout rates are below the site specific target	Throughout operational phase	NEM:AQA, GN827
		Noise nuisance	Noise generated from vehicle / drilling operations	increased ambient noise levels	Neg <ul style="list-style-type: none"> When drilling occurs in an area that can be heard by surrounding residents, drilling activities will be restricted to daylight hours (unless permission to drill for longer is obtained from the closest community). Documented proof of this permission must be maintained. Staff will be supplied with the appropriate PPE. The timing of implementing drilling programme is not set. If necessary certain drill sites can be timed to occur during school terms. This will be confirmed during the pre-drilling consultation. 	Noise levels emanating from prospecting activities are kept below the acceptable standard	Throughout operational phase	ECA, NEM:AQA, SANS 10103
		Visual	Drill rig temporarily visible	visible drill rigs	Neg <ul style="list-style-type: none"> Inform employees of the no poaching rule Monitoring the undisturbed areas for snares and destroy if found. 	The visual appearance of the drilling sites is kept neat and tidy	Throughout operational phase	NA

⁴ The template provided on the DMR website has an error in the reference to a former section of this report. This has been crossed out and amended by underlined text.

Activity	Aspect	Source / Cause	Impact	Impact Management Actions	Impact Management Outcomes	Timeframe	Compliance
	Water	Pollution of surface water resource through oil spills / spills from chemical toilets impacting on local water course(s)	Pollution of a water resource	Neg <ul style="list-style-type: none"> • Chemical toilets to be provided at the drill site for sanitation requirements. • Only well maintained drill rigs with a service history to be used during the drilling campaign • At each drill site the drill equipment will be positioned on a plastic lining when not in use to prevent possible spillages. • Only biodegradable lubricants will be used during the drilling operations. • All chemicals required for the duration of the surface drilling operation will be stored in a sealed container at the established drill site. - Spillages of hydrocarbon liquids will be cleaned up immediately and placed in a sealed container and disposed of appropriately. - Diesel container / bowser will be housed on a plastic lined area when on site. 	Hydrocarbons entering any water source is limited or avoided altogether	Throughout operational phase	NWA, GN 704
	Soil	Soil is not stored for rehabilitation requirements / soil is altered through hydrocarbon spills, compaction or erosion	Degradation of soil quality effecting the ease to implement rehabilitation activities	Neg <p>Drill sites: The following topsoil management measures are applicable for the drill sites and drilling;</p> <ul style="list-style-type: none"> • Each site will only be developed a maximum time of 1 week prior to it being used and only once drilling in the area is confirmed. No drill sites to be created unnecessarily. • The topsoil from the area to be drilled will be moved aside and stored next to the drilling operation. • Topsoil (top 50cm) and overburden will be kept separate (if applicable). • The drill equipment will be on a plastic lining when not in use to ensure that no unnecessary soil pollution will occur. Upon completion of the drilling programme the soil will be returned to the exact area that it was moved from. Overburden will be replaced first followed by topsoil. • If a sump is required - the soil moved to dig the sump will be located next to the sump. The sump will be lined with plastic. After completion of drilling, the plastic lining will be removed from the sump and disposed of in a registered landfill site and the soil moved to generate the sump will be replaced. • Any chemicals stored at the drill site which could pollute soil if spilt will either be stored within a protected container or in the case of a diesel container on a plastic lined area. - The plastic lining must be large enough to cope with minor spillages and leaks. • Any soil polluted as a result of a hydrocarbon spill will be dug up and disposed of as hazardous waste. <p>Maintenance: The following will be applicable with regards to the carrying out of maintenance;</p> <ul style="list-style-type: none"> • Only minor maintenance may occur on-site with use of drip trays and / or on a plastic lining. • Major maintenance activities must be undertaken off-site. • Any chemical spillages must be cleaned up immediately and be dealt with as hazardous waste. 	Compaction and degradation are limited. Hydrocarbons entering the soil is limited or avoided altogether.	Throughout operational phase	CARA
	Fauna / flora (Ecology)	Stripping of flora and impacting on habitats when clearing a drill pad area or creating a new access track.	Destruction of flora and impact on habitats	Neg <ul style="list-style-type: none"> • Access route will be developed to avoid any trees or termite mounds if present. • Once drilling is completed at a site, concurrent rehabilitation will be implemented. 	Sensitive areas are identified before invasive activities are undertaken and these areas are avoided. Areas disturbed by invasive activities are restored to resemble the area before activities commenced.	Throughout operational phase	NA
	Heritage	Clearing of area for the drill pad may effect a heritage resource.	impacting a heritage resource	Neg <p>Should archaeological artefacts or skeletal material be revealed in the area during development activities, such activities should be halted, and a university or museum notified in order for an investigation and evaluation of the find(s) to take place</p>	No cultural / heritage site is destroyed or damaged by prospecting activities.	Throughout operational phase	NHRA
	Social	Unauthorised access to land. Lack of consideration of landowners requests. Not rehabilitating land.	Unhappy landowners / land occupiers	Neg <ul style="list-style-type: none"> • 1 month prior to implementing any drilling the applicable landowner/developer must be re-consulted. • Record of consultation must be kept on file • Reasonable request from the landowner must be considered and where possible addressed • The final positioning of the drill site will where feasible, adhere to the following minimum distances: <ul style="list-style-type: none"> - Ideally maintain 100m away from any occupied house (minimum of at least 50m). 	Prospecting activities are undertaken in agreement with the landowner so as not to jeopardise current or future landuses. Good relations maintained landowners.	Throughout operational phase	NA

Activity	Aspect	Source / Cause	Impact	Impact Management Actions	Impact Management Outcomes	Timeframe	Compliance
2&3. Concurrent rehabilitation Concurrent rehabilitation of drill pads upon completion of drilling activities	All environmental aspects and socio-economic impacts on interested and affected parties	Implementation of successful concurrent rehabilitation activities	Reverse the temporary negative impacts associated with the drilling activities.	Pos After invasive prospecting is complete, the land will be reverted back to its original condition. • (New) Access routes: Will be rehabilitated with the aim to return the road to its original state. Existing access routes will be left in the same state they were found. • Drill pads: After drilling has been completed in one area, the drilling team will ensure the site is reverted back to its original by: - Removing all infrastructures, such as the drill equipment and the chemical toilet. - Infilling the boreholes as per legal requirements. - Ensure that no foreign matter (waste) is left behind on the drill site. - Refilling the sump required for the drilling activities (if applicable). Initially the plastic lining will be removed and disposed on in a registered landfill site and the soil returned to effectively fill in the sump. - The whole drill site will be inspected for any signs of hydrocarbon pollution. Any identified soil which has been polluted as a result of the drilling activities will be removed and disposed of in a registered landfill site. - Any area compacted as a result of the drill rig will be tilled. • Upon completion of the drilling programme another set of photographs of the access route and the individual drill site after the implementation of concurrent rehabilitation will act as proof of rehabilitation to its original state / improvement to the original state. • These photographs will be maintained on file. • The applicable landowner will be requested to inspect the rehabilitated drill sites and if willing sign off acceptance of rehabilitation. • Upon completion of the drilling activities, each site will be monitored for the next year on a bi-annual basis to ensure that no environmentally related problems resulting from the drilling activities has occurred and that the drill sites are re-vegetating naturally.	The drill sites are returned to a state that will support a predetermined future use.	Throughout operational phase	NEM:BA, CARA
4. Documentation Resource statement Prefeasibility study Specialist studies Bankable feasibility study Preparation for Mining Authorisation	All environmental aspects and socio-economic impacts on interested and affected parties	Specialist requiring access to properties to complete various studies	Social impacts	Neg • Prior to commencing with the site visit of any specialist study, the affected landowner needs to be re-consulted. During this re-consulting the landowner needs to be made aware of the following: o Date that the specialist intends to access the land o Duration that the specialist will require on the land o Details of any person who will form part of the specialist team o Details of the activity the specialist will undertake on the property • All reasonable requests from the landowner (during the consultation) must be implemented • The applicable landowner should be provided / informed of the outcomes of the specialist study once completed.			
4. General Requirements - Administration	Documentation	Management of legally required documents	Legal compliance (in terms of record keeping)	Pos Ensure valid copies of the following documents / authorisations are available on-site at all times (list provided below): • The registered prospecting right and associated documents • A copy of the regulation 2(2) plan depicting the prospecting area. • A copy of the approved EMP • Copy of the latest Environmental Performance Audit. • Any EIA authorisation and associated conditions of approval • Copy of water use license application and any conditions of approval • Records of implementing concurrent rehabilitation. • Records of required photographic gallery • Records of all environmental awareness training • Complaint book • A copy of the weekly inspection reports • Records of consultation with interested and affected parties • Records of non-conformances • Vehicle inspection check sheets and vehicle maintenance records	Valid environmental authorisations applicable to the activities being undertaken on-site	While the prospecting right is valid.	As per authorisation
	Handling complaints	Interested and affected parties	Poor relations between KME and interested and affected parties.	Neg All complaints received by the mine must be recorded. The information recorded must include, but is not limited to: • Date of complaint. • Name and contact details of complainant. • Nature / Description of the complaint. • A description as to how the complaint will be addressed. • A proposed target date for rectifying the complaint. • Date when corrective action was implemented (if necessary). • Confirmation / Explanation of feedback provided to the complainant. • A list of any monitoring or follow-up work that is required, including	Active communication with I&AP's resulting in potential issues being solved timeously.	Throughout operational phase	NA

Activity	Aspect	Source / Cause	Impact	Impact Management Actions	Impact Management Outcomes	Timeframe	Compliance		
				target dates.					
	Ongoing consultation with I&AP's	Interested and affected parties	Maintaining a relation between KME and interested and affected parties.	Pos	<ul style="list-style-type: none"> Maintain a proactive open door policy with all interested and affected parties. Provide the landowner and surrounding land occupiers and any other interested and affected party an opportunity to discuss the environmental performance of the mine (at least annually) and maintain a record of all communication. 	Active communication with I&AP's resulting in potential issues being solved timeously.	Throughout operational phase	NA	
	Training	Training undertaken as per the Environmental Awareness Plan	Improved environmental awareness resulting in reduced impacts due to the occurrence of fewer environmental incidents / correct response to incidents	Pos	<ul style="list-style-type: none"> Prior to the implementation of drilling activities the drilling contractors will undergo environmental awareness training to inform drillers of the sensitivity of; <ul style="list-style-type: none"> The sensitivity of water courses, wetlands and other ecological features such as termite mounds. The need to avoid pollution of the soil by ensuring hydrocarbon spills are minimized or if they do occur they are cleaned up. The need to implement effective waste management (separation of domestic & hazardous waste) Do not unnecessarily disturb any wildlife Good behavior in terms of interaction with the land owner and local community when implementing drilling 	Improved environmental awareness resulting in reduced impacts due to the occurrence of fewer environmental incidents / correct response to incidents	As per the EAP	NEMA	
5. Emergency Incidents	General			Neg	<ul style="list-style-type: none"> All assembly points must be: <ul style="list-style-type: none"> Clearly labelled, Documented, and Communicated to all employees. Emergency numbers to be displayed at all assembly points. Conduct emergency drills / mock exercises of environmental emergency incidents to practice and perfect response. This will minimise the safety and environment impacts of real emergencies. If this identified deficiencies in the management actions, the relevant procedures will be amended Relevant government / municipal departments will be contacted within 14 days of an emergency incident which has resulted in environmental impacts / pollution. Notifications will be as per the relevant legislation: i.e.: <ul style="list-style-type: none"> As per Section 30 of NEMA, and As per Section 20 of the NWA and Regulation 2(d) of GN704 for impacts on water quality. 	Facilitate a fast response to an emergency incident	Immediately stop source Within 24 hours of incident Within 14 days of incident	NEMA, S30 NWA, S20	
	Non conformances	Unplanned incidents	Varied depending on the incident.	Neg	<p>Should an environmental impact occur which is outside the normal operating environmental conditions of the mine (and is not considered an environmental emergency), it can be raised as a non-conformance. Non-conformances can be raised by any employee, customer or interested and affected party. If a non-conformance is raised the mine will:</p> <ul style="list-style-type: none"> Record the non-conformance and undertake the following actions <ul style="list-style-type: none"> Implement corrective action if required. Identify the root cause of the non-conformance. Identify and implement preventative actions to ensure that it does not re-occur. Once all actions and investigations have been completed, it can be documented and signed off. 	Effective management of any impacts that are not specifically managed by mitigation measures specified in the EMP.	Throughout operational phase	NA	
	Hydrocarbon spills	Pollution of soil, surface and ground water	Large scale spills of hydrocarbons resulting from a ruptured tank	Pollution of soils and potentially off-site water bodies (if storm water flows into water courses) / ground water if spills remain in the soils for extended periods	Neg	<ul style="list-style-type: none"> Stop the source of the spill 'Contain the spill (utilising fine material on-site or material from the spill kits), Lift all contaminated "soils", and Dispose (at a licenced hazardous disposal facility) or bioremediation (at a licenced facility) contaminated "soils" Report the incident to the authorities 	Pollution is confined to the incident area	Immediately stop source Within 24 hours of incident Within 14 days of incident	NEMA, S30 NWA, S20
	Fire		Smoke emissions from a fire	Air pollution as a result of smoke emissions	Neg	<ul style="list-style-type: none"> The potential for the spread of veld fires will be reduced by: <ul style="list-style-type: none"> Cutting vegetation from around buildings, and Removing vegetation from the explosive magazine area. <p>Maintained fire extinguishers will be available within the plant area and in the admin offices. Awareness training will include procedure required to alert emergency services.</p>	Fires that start in the plant area on-site will be contained	Daily during the Life of Mine	Veld fire act

i) FINANCIAL PROVISION⁵

(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 Regulation 22(2)(d) as described in ~~2-4~~ Part A, (3)(q)(iv)(1)⁶ herein.***

The current closure **objective** for for the activities contained within this application is to **rehabilitate the disturbed land back to the state it was found prior to undertaking any drilling.**

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

Landowners and I&AP's have the opportunity to review the sections of this report pertaining to closure and rehabilitation and to provide their comments thereon. Any comments received specifically relating to closure and rehabilitation will be addressed in these sections when finalising the report after the consultation period has concluded.

- (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***

Figure 22 below, is a typical example of the drilling process and subsequent rehabilitation activities that the proposed drilling programme will comprise of. Rehabilitation will include the following:

- Removing all infrastructures, including the drill rig, the temporary shack, the mobile diesel tank, the mobile water tank and the chemical toilet.
- Capping the boreholes as per legal requirements.
- Ensure that no foreign matter is left behind on the drill site.
- Refilling the sump required for the drilling activities. Initially the plastic lining will be removed and disposed on in a registered landfill site and the soil returned to effectively fill in the sump.
- The whole drill site will be inspected for any signs of hydrocarbon pollution. Any identified soil which has been polluted as a result of the drilling activities will be removed and disposed of in a registered landfill site.
- Any area compacted as a result of the drill rig will be loosened and any ruts created by accessing or leaving the site for the drilling activity will be filled in to ensure that no future erosion shall emanate from the site.
- Applicable landowner will be requested to inspect the success of the rehabilitation.

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

The rehabilitated land will represent the pre-drilling landuse. Figure 22 provides a visual indication of the drilling process from site establishment to final rehabilitation.

⁵ The template provided on the DMR website does not have headings for numbers "g" and "h". Numbering has been maintained as per the template.

⁶ The template provided on the DMR website has an error in the reference to a former section of this report. This has been crossed out and amended by underlined text.

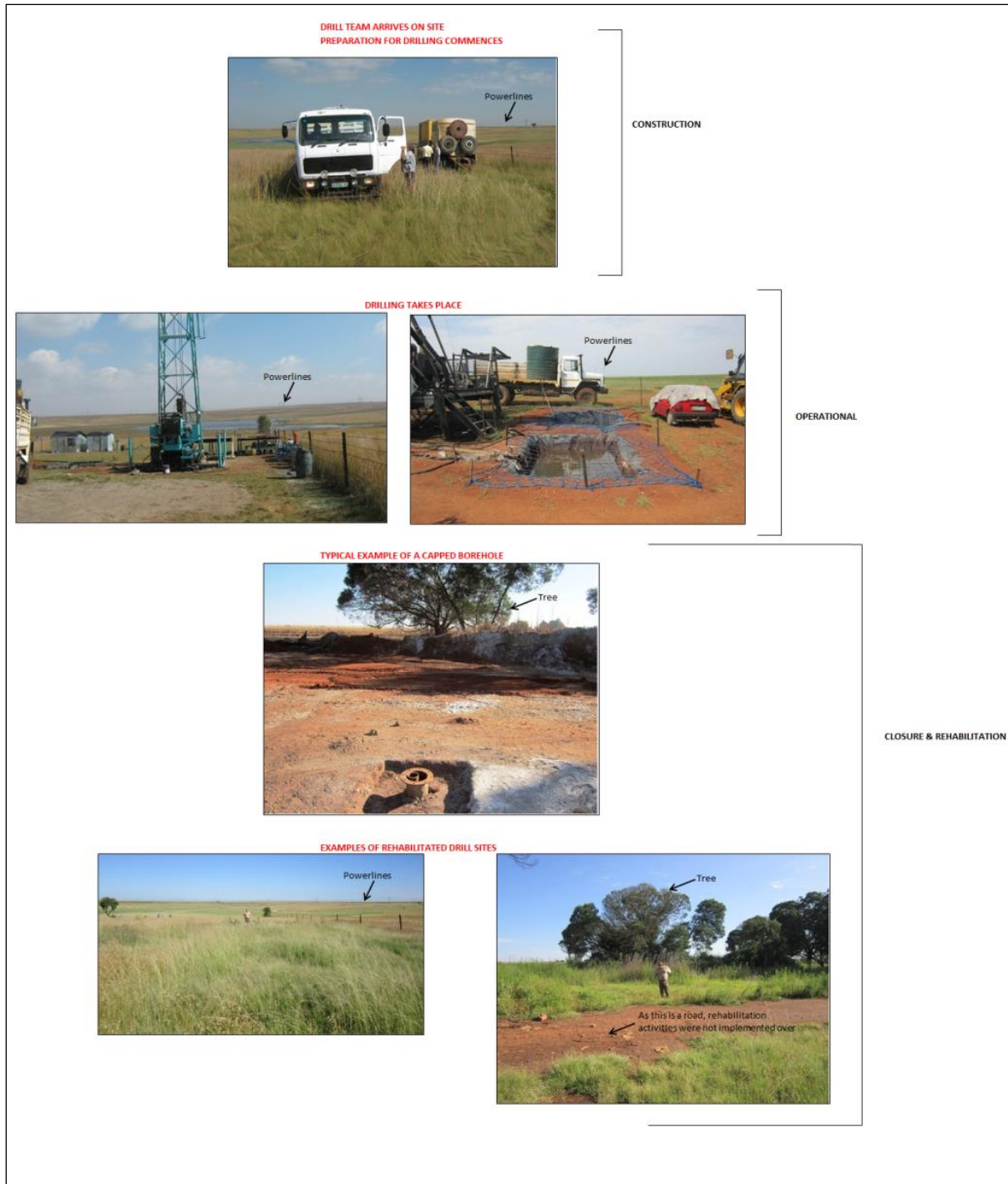


Figure 22: Example of the drilling process and subsequent rehabilitation activities to be undertaken.

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

R 240 000 has been proposed for financial provision purposes. Please refer to Section 3(s).

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

The amount calculated above will be provided for in the form of Insurance financial guarantee.

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

Based on the Environmental Impact Assessment (see Appendix A.4), the following monitoring network may be required and must be considered once the actual sampling sites are determined from the results of the initial phase of the project.

IMPACTS	SOURCE ACTIVITY	FUNCTIONAL REQUIREMENTS	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY
Dust Fallout	<ul style="list-style-type: none"> • Stripping of topsoil • Drilling • Vehicle entrainment • Exposed surfaces (access roads, drill pads etc) 	See minimum requirements below	Monitoring by an independent service provider and results scrutinised by the mine manager.	Monthly
Noise levels	<ul style="list-style-type: none"> • Drilling • Vehicle / equipment activities 	See minimum requirements below	Monitoring by an independent service provider and results scrutinised by the mine manager.	Biannually
Surface water quality	<ul style="list-style-type: none"> • Hydrocarbon spill from vehicles / bowser etc 	See minimum requirements below	Monitoring by an independent service provider and results scrutinised by the mine manager.	Quarterly

Monitoring Protocols and Minimum Requirements

The need for monitoring is to ensure good environmental performance and compliance to legal requirements. Should a monitoring network be deemed necessary from evidence collected during the initial phase of prospecting, KME must evaluate their environmental monitoring results to ensure continual improvement in environmental management.

All results from monitoring will be used to guide future environmental management and provide a benchmark against which to measure continual improvement in terms of environmental performance.

Each monitoring network will be established to identify problems and measure the success or effectiveness of management measures. In order to achieve this, monitoring protocols must be developed for all monitoring networks. These monitoring protocols must provide the following information:

- Objectives of the monitoring programme.
- Location of monitoring points (GPS co-ordinates), a map illustrating the location of the sampling points relative to mine infrastructure and pollution sources. This must be accompanied by the motivation for the site selections.
- Method of monitoring.
- Frequency of monitoring – supported to reference to SANS where possible.
- List of parameters to monitor for and the reason why these parameters have been selected. I.e. linked to pollution sources at the mine.
- What guidelines and / or standards will be used as performance indicators. The reason(s) for using these standards or guidelines. This is particularly important for water sample analysis as guidelines are used as indicators and these will vary depending on a number of site-specific factors.
- Details concerning how the results will be presented. The presentation of the results must be in a manner that easily highlights when guidelines have been exceeded. The results must be presented in such a way that trends can be established and monitored. Historic results should be presented at the same time as presenting the new results.
- How the results will be used to provide guidance to the mine. An explanation as to how exceedances of standards or guidelines will be highlighted and how the probable cause for the exceedance will be identified. A commitment to presenting guidance regarding what action to be taken in the event of the appropriate standards or guidelines being exceeded. It must be noted that in the event of an exceedance of standards or guidelines and / or permit conditions, a report must be submitted to the relevant authorities in writing within 14 days. This report must include:
 - Details of the incident that caused the exceedance.
 - Corrective action plan to clean up / avoid recurrence.
 - Time frame / schedule for implementation of corrective action.
 - Where the results will be stored.

A ***guideline*** of minimum requirements for each monitoring campaign has been provided below, with site specific information provided where necessary. ***It must be stressed that these protocols are only a guide and that they are likely to change during the life of a mine depending on a number of factors, such as; advice for service providers, input from specialists, input from the authorities, analysis of monitoring results, changes in neighbouring land use, change in on-site activities and/ or changes in monitoring requirements (i.e. SANS).***

Minimum requirements for air quality (dust fallout) monitoring.

DUST FALLOUT MONITORING		
Applicable Legislation:	<ul style="list-style-type: none"> • National Environmental Management Act, Act No 107 of 1998 (NEMA), particularly Section 28. • National Environmental Management: Air Quality Act, Act No. 39 of 2004 (NEM:AQA), particularly Section 12. • South African National Standard - SANS 1929. 	
Parameters:	<ul style="list-style-type: none"> • Dust Fallout / Deposition. 	
Monitoring Method:	Single or directional fallout monitors, following the American Society for Testing and Materials standard method for collection and analysis of dustfall (ASTM D1739). An open topped cylinder (bucket) not less than 150mm in diameter with a height not less than twice the diameter and suspended 2m above the ground (<i>fixed point monitoring</i>). The bucket must be exposed for a <i>continuous</i> period of 30 days (± 2 days). The dust is dissolved in water which is returned to the laboratory, filtered and the residue dried before the insoluble dust is weighed. Results are expressed as mg/m ² /day.	
Site Selection Parameters:	Monitoring sites should be located within 2km of the mining area (background sites can be further away) and must consider: <ul style="list-style-type: none"> • <i>Wind direction</i>: Monitoring stations should be located downwind of the mining site. (Ensure monitoring point recording dust fallout downwind of all prominent wind directions.) • <i>Receptors</i>: Monitoring points must be located at all sensitive receptors (residential area, schools, ecologically sensitive habitats, etc.) within 2km of the mine. • <i>Other sources of pollution in the vicinity</i>: If the mining site is located downwind of another dust source, locate a directional unit between the mining site and the off-site source. 	
Recommended Sites:	The fallout buckets need to be placed along the boundary of the quarry in at least the four main wind directions.	
Monitoring Interval:	<ul style="list-style-type: none"> • <i>Monthly (on-going)</i>: Sampler should be exposed for a continuous period of 30 days (± 2 days), results expressed as mg/m²/day. 	
Evaluation of Results:	Performance Indicators:	<ul style="list-style-type: none"> • SANS 1929. • On-site – target of below Industrial limit. • Site boundary – Industrial limit. • Previous monitoring results.
	Reporting:	It is advisable to store all results in a spread sheet and project the results graphically in order to determine: <ul style="list-style-type: none"> • Exceedances of the SANS, which should be presented on the graphs. • Trends with previously monitored results.
	Environmental Management:	When exceedances of performance indicators are recorded, the following steps must be taken and documented: <ul style="list-style-type: none"> • Determine the source of the pollution and prevailing winds. • If pollution is from the mine, determine if it is as a result of a once off incident or a routine event. • Determine how the incident / event can be prevented, or how it can be managed in future. Implement appropriate mitigation measures. • The success of mitigation must be confirmed through continued routine monthly sampling. • If pollution continues after two months of monitoring, alternative preventative / mitigation measures must be implemented. The success must once again be confirmed through the routine monthly monitoring.

Minimum requirements for sound level monitoring.

SOUND LEVEL MONITORING		
Applicable Legislation:	<ul style="list-style-type: none"> • Regulation 154 (Regulations regarding Noise Control) of the Environment and Conservation Act, Act No. 73 of 1989 (ECA). • South African National Standard - SANS 10103 (Previously SABS 0103). 	
Parameters:	Noise must be measured in "dBA".	
Monitoring Method:	<p>Outdoor monitoring must be undertaken by placing the microphone of an integrating impulse sound level meter:</p> <ul style="list-style-type: none"> • At least 1.2m, but not more than 1.4m, above the ground and • At least 3.5m away from walls, buildings or sound reflecting surfaces. <p>The person taking the measurements must ensure:</p> <ul style="list-style-type: none"> • The microphone of an integrating impulse sound level meter is at all times provided with a windshield; • The measuring instruments are operated strictly in accordance with the manufacturer's instructions; and • Sound measuring instruments are checked annually by the SABS or a calibration laboratory approved by the Minister, to ensure accuracy. 	
Site Selection Parameters:	<ul style="list-style-type: none"> • <i>On the mine boundary</i> in direct line of site of: The active mining area. • <i>Off-site</i> at the following locations: In direct line of site of the active mining area. Any sensitive receptors (such as schools, hospitals, houses, etc.) in close proximity to the mine. Locations from which noise complaints have been received. A site away from the mine that reflects the "background" noise levels. 	
Recommended Sites:	Site used in previous surveys and / or the site of a complaint.	
Monitoring Interval:	<ul style="list-style-type: none"> • <i>Once off</i> to determine the baseline. Thereafter whenever there is a <i>change in the process</i> or a <i>complaint</i>. If there is a complaint a survey must be commissioned to qualify the complaint. 	
Evaluation of Results:	Performance Indicators:	<ul style="list-style-type: none"> • SANS 10103. • Site boundary – Industrial district. • Site boundary with residential developments – Urban district, with road traffic. • Previously monitoring results.
	Reporting:	<p>It is advisable to store all results in a spread sheet and project the results graphically in order to determine:</p> <ul style="list-style-type: none"> • Exceedances of the SANS, which should be presented on the graphs. • Trends with previously monitored results.
	Environmental Management:	<p>When exceedances of performance indicators are recorded, the following steps must be taken and documented:</p> <ul style="list-style-type: none"> • Determine the source of elevated sound levels. • If increased sound levels are from the mine, determine if this is as a result of a once off incident or a routine event. • Determine how the incident / event can be prevented, or how it can be managed in future. Implement appropriate mitigation measures. • The success of mitigation measures must be confirmed through a follow-up survey. • If elevated sound levels continue after follow-up survey, alternative preventative / mitigation measures must be implemented. The success must once again be confirmed through a follow-up survey.

Minimum requirements for water quality monitoring

WATER QUALITY MONITORING	
Applicable Legislation and Guidelines:	<ul style="list-style-type: none"> • National Water Act, Act No. 36 of 1998. • GN704. • Water Monitoring Systems (DWSF, 2007).
Monitoring Method:	<p>The following must be ensured when undertaking sample collection:</p> <ul style="list-style-type: none"> • Containers: It is preferable to use containers provided by the laboratory. Samples for chemical analysis must be collected in clean bottles. Samples for biological analysis must be collected in sterile bottles. • Sampler: Sampling should be undertaken by the same two people to minimise variation in collection points and collection methods. • Collection: Rinse bottles and lids three times with water being collected. Ensure sufficient volume (for analysis) is collected. • Time of sample collection: Collect samples on the same day of the week and at approximately the same time of day. • Storage: Samples must not be stored for longer than 24 hours and must be stored in a cool dark place. <p>Surface water:</p> <ul style="list-style-type: none"> • Location of sampling point: Always collect from the same point. • Location of sample collection: Water body samples must be taken from at least 2m away from the edge of the water body. • Groundwater: • Sampler: It is strongly recommended that sampling is undertaken by a contractor who has the equipment to do the necessary on-site tests. • Wells to be purged (using a submersible pump) to chemical stabilisation based on temperature, pH, dissolved oxygen (DO) and electrical conductivity (EC) or a minimum of 3 well volumes. Should there be insufficient recharge in the well the well must be purged of the standing volume of water in well. • The well should be allowed to recover prior to sampling. • Record on a sampling sheet a) monitoring point status, b) purge data and c) important site specific observations that may affect water quality.
Site Selection Parameters:	<p>The following must be considered when making the site selections:</p> <ul style="list-style-type: none"> • Point of entry. Sample from the watercourse as it enters the zone of influence of the mining site to obtain baseline data. • Pollution / Discharge points. Sample downstream of the point where water and / or effluents are discharged to determine if the mine is releasing polluted water. • Point of exit. Sample from the watercourse where it exits the zone of influence of the mining site to determine if the mine has polluted the watercourse. • "Standing" water. Sample from standing water within the mining area (if not being discharged).
Recommended Sites:	<p>Site locations can change based on input from specialists, the authorities, monitoring results, as a result of a change in monitoring requirements, etc. A water quality monitoring protocol should also be available and updated to aid new service providers.</p>
Determinant (guideline):	<p>The monitoring constituents will be selected based on the following factors:</p> <ul style="list-style-type: none"> • Pollution sources on-site: i.e. monitor for suspended solids where water flows over exposed surfaces. • Type of mineral being mined: Exposing sub-surface rock may result in chemical reactions that will change the water quality of run-off. • Authority requirements: i.e. The DWS regional office and / or the catchment management agency (CMA). • Downstream receptors / users: Use quality requirements of downstream receptors / users in order to determine compliance.

WATER QUALITY MONITORING		
Monitoring Determinants: and Intervals:	<p>These should be included in the water quality monitoring protocol</p> <p>As a guide, most determinants are monitored on a <i>monthly</i> basis, with an ICP scan recommended to occur <i>annually</i>. However, these intervals may change based on input from specialists, the authorities, monitoring results, as a result of a change in monitoring requirements, etc.</p>	
Evaluation of Results:	Performance Indicators:	<ul style="list-style-type: none"> • For in-stream sampling points: The in-stream water quality guidelines for the Jukskei River (or a similar equivalent), provided by DWS. • For all <i>monitoring points</i>: Previous monitoring results.
	Reporting:	<p>It is advisable to store all results in a spread sheet and project the results graphically in order to determine:</p> <ul style="list-style-type: none"> • Exceedances of the DWS guidelines (presented on the graphs). • Trends with previously monitored results.
	Environmental Management:	<p>When exceedances of performance indicators are recorded, the following steps must be taken and documented:</p> <ul style="list-style-type: none"> • Determine if the source of the pollution is as a result of mining activities. • If yes determine if this is a once off incident or as a result of routine events. • If the exceedances are severe, report the incident to the DWS as per Regulation 2(1)(c) of GN704 of the NWA⁷. • Determine how the incident can be prevented / managed in future and appropriate mitigation measures to be implemented (BATNEEC⁸). If exceedance was severe, this must be undertaken in consultation with DWS. • The success of mitigation measures must be confirmed through monthly sampling or an interval stipulated by DWS (for severe exceedances). • If it is observed that pollution continues after two months of monitoring, alternative preventative / mitigation measures must be implemented (after consultation with DWS in the case of severe exceedances). Confirm success of management measures through the routine monthly monitoring.
Storage and Availability of Data	<ul style="list-style-type: none"> • All monitoring results are stored on-site at Jukskei Quarry offices and at SSC. • Monitoring results are available for review at the mine offices provided prior arrangement is made 	

⁷ National Water Act, Act No. 36 of 1998

⁸ Best Available Technology Not Entailing Excessive Cost.

I) INDICATE THE FREQUENCY OF THE SUBMISSION OF THE PERFORMANCE ASSESSMENT REPORT⁹

As the proposed duration of the right is five years, it is proposed that the environmental audit be undertaken every two years and submitted to the DMR in accordance with Regulation 34 of GNR 982 of the National Environmental Management Act, Act No. 107 of 1998, as amended.

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

KME recognises the importance of environmental training and is committed to implementing training to its employees. As part of this commitment, KME recognises the importance of making all employees and subcontractors aware of the potential environmental impact that could result from conducting their jobs and how this potential can be minimised through effective training.

Based on the impact assessment the most important environmental management issues relating to KME are:

- Recognising the importance of **managing dust emissions.**
- Recognising the importance of **managing nuisance noise**
- Recognising the importance of **good relationship with landowners**
- Being aware of the potential for **surface and groundwater to be impacted by hydrocarbon spills.**

It is important to note that the environmental awareness programme is a living document and should be reviewed regularly to ensure that relevant environmental concerns are discussed and the potential impacts of such concerns are minimised. The syllabus to be taught to employees has been determined through identification of the major environmental concerns raised in the impact assessment of this report.

Employees will be informally trained prior to the start of undertaking invasive prospecting activities where various environmental topics will be addressed. Training will be implemented in the following forums:

- Induction training / Environmental talks
- On the job training / EMP training
- Training on an incident.

Induction training / Environmental talks:

Prior to the implementation of drilling activities the drilling contractors will undergo environmental awareness training to inform drillers of the sensitivity of;

- The need to use existing tracks and minimize their impact on the environment
- The need to keep the drill pad disturbance to a minimum.
- The need to avoid pollution of the soil
- The need to avoid the infrastructure in close proximity to the drilling area.
- The need to respect buffer zones
- The need to implement effective waste management (separation of domestic & hazardous waste)
- Do not unnecessarily disturb any wildlife or pristine vegetation.
- Good behavior in terms of interaction with the local community when implementing drilling.

On the Job training / EMP training:

⁹ The template provided on the DMR website does not have headings for numbers "j" and "k". Numbering has been maintained as per the template.

- Prior to the implementation of drilling activities the drilling contractors will undergo environmental management plan training to inform drillers of the environmental requirements. These requirements have been summarised in Appendix B3 as an implementation plan.

Training on incidents:

If an environmental incident occurred the next day, the following topics will be discussed (this is not an exhaustive list):

- How and why the incident occurred.
- How the incidents was cleaned up (if applicable).
- Evaluation of the clean-up or response by staff.
- Can the clean-up or response be improved.
- What preventative measures should be implemented / what can be done to reduce the likelihood of the incident recurring.

A record of all training implemented will be maintained at the registered office.

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

Managing Non-Conformances:

Management & Mitigation	Timeframes
<p>1. Non-Conformances:</p> <ul style="list-style-type: none"> • Should an environmental impact occur which is outside the normal operating environmental conditions of the mine (and is not considered an environmental emergency), it must be raised as a non-conformance. • Non-conformances may be raised by any employee, customer or interested and affected party. If a non-conformance is raised the mine: <ul style="list-style-type: none"> - Record the non-conformance and undertake the actions described below. <ul style="list-style-type: none"> • For reported non-conformances, the applicable responsible person must: <ul style="list-style-type: none"> - Implement corrective action if required. - Identify the source of the non-conformance. - Identify and implement preventative actions to ensure that it does not re-occur. - Once all actions and investigations have been completed, it be documented and signed off. - Retain all documents pertaining to the non-conformance to be made available for inspection. 	LoM

Managing Emergency Incidents:

Emergency incidents / accidents can be defined as incidents / accidents having the following criteria:

- The likelihood of these incidents / accidents occurring is considered to be very low or may never take place during the life of the mine.
- The environmental impacts associated with these incidents / accidents may be significant.
- It is essential that the mine personnel know how to respond in the event of an environmental emergency situation in order to avoid significant environmental degradation / impacts or injury to human health.

Ideally such incidents should not occur if all necessary management measures are implemented. However, despite the best intentions and the best environmental management practices, it is impossible to ensure that no incidents / accidents ever occur on a mining site. Therefore, it is vital to ensure that all personnel are aware of the management measures to be undertaken in the event of an accident.

Overall Management

Although there are emergency specific management measures to be implemented (discussed separately for each identified emergency incident), there are also common management measures that must be applied throughout.

Management & Mitigation	Timeframes
<ul style="list-style-type: none"> Assembly points must be: <ul style="list-style-type: none"> Clearly labelled. Documented. Communicated to all employees. 	LoM.
<ul style="list-style-type: none"> Emergency numbers are to be prominently displayed. 	LoM.
<ul style="list-style-type: none"> Conduct emergency drills / mock exercises of emergency incidents to practice and perfect response. This will minimise the safety and environment impacts of real emergency. 	Annually.
<ul style="list-style-type: none"> If this identifies deficiencies in the management actions, amend relevant procedures 	Within a week.
<ul style="list-style-type: none"> Report any emergency incidents to the relevant government / municipal departments within 14 days of the incident. 	When an incident occurs
<ul style="list-style-type: none"> General environmental incidents must be reported to environmental authorities, as required in Section 30 of the NEMA. 	When an incident occurs

Large Hydrocarbon Spills (spills resulting in a surface pollution spread of greater than 2m²).

Goals and Objectives: Prevent extensive pollution as a result of a hydrocarbon spill. In the event that a spill occurs (despite management measures), immediate **clean up** steps should be taken as described below, followed by the **reporting** of the incident.

Clean up Procedures	Timeframes
<p>Prevention Steps:</p> <ul style="list-style-type: none"> Prevent vehicles that are in a state of disrepair (leaking diesel or oil) from operating. Ensure that the diesel bowser is maintained in a good condition and does not leak. Train employees on fuel dispensing techniques to minimise the potential of a spills. Implement daily vehicle checks for oil leaks. 	LoM
<p>Clean-up Steps:</p> <ul style="list-style-type: none"> The source of the spill must be stopped and the spill must be contained. 	In the event of a spill.
<ul style="list-style-type: none"> All contaminated material must be lifted and stored in containers that do not leak (the type of container will be determined by the volume of contaminated material to be stored). 	
<ul style="list-style-type: none"> Dispose of contaminated material as hazardous waste. 	LoM
<ul style="list-style-type: none"> Keep a record of the collection. Retain proof of disposal (waste manifest documents) from the hazardous waste disposal company that this waste was disposed of at a suitably licensed facility. 	LoM
<p>Reporting:</p> <ul style="list-style-type: none"> Report the incident as per the requirements in Section 30 of the NEMA. 	Within 14 days.

Fire

Goals and Objectives: Prevent the spread of fires.

Management & Mitigation	Timeframes
<p>Vehicle/equipment Fires:</p> <ul style="list-style-type: none"> Fire extinguishers to be available in all vehicles and must be checked on a monthly basis. 	LoM.
<ul style="list-style-type: none"> Fire extinguishers to be checked by a qualified person. 	Annually.

Management & Mitigation	Timeframes
<ul style="list-style-type: none"> If the fire cannot be controlled by the person who discovers the fire, it will be reported to the emergency services. 	Immediately.
<p>Training:</p> <ul style="list-style-type: none"> Selected employees who form the fire fighting team will undergo fire drill training. Records of training must be retained. 	Annually.

n) SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

(Among others, confirm that the financial provision will be reviewed annually).

As the final locations of the proposed drill sites are not finalised (can only be finalised after phase 1 of the prospecting works programme), it is essential that KME must apply the following buffer zones to sensitive environments and infrastructure identified in the baseline section of this report:

- 100m buffer from any water resource
- 50m buffer from any wetland
- 50m buffer from any infrastructure (buildings, roads, railways)
- 50m buffer from any discovered heritage resource

It is also imperative that landowners and land occupiers are reconsulted at least 1 month prior to implementing any invasive activities in order to maintain good relations. Any reasonable concerns from the landowner must be considered.

KME must commission an independent consultant to undertake an Environmental Audit of the EMP every two years and submit it to the DMR.

2. UNDERTAKINGS

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&Ap's, where relevant
- c) The Inclusion of Inputs and Recommendations from the Specialist Reports, where Relevant
- 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, where relevant

Signature of the EAP: _____

Name of company: _____

Date: _____

UNDERTAKING BY APPLICANT

(To be signed on approval by the DMR)

I, _____, representative for KME and Exploration (Pty) Ltd, hereby declare that the information regarding the prospecting process in this document is true, complete and correct and that I undertake to implement the measures as described in this Environmental Management Programme report. In addition to the implementation of the Environmental Management Programme report, I understand that this undertaking is legally binding and that failure to give effect hereto will render me liable for prosecution. I am also aware that the Regional Manager may, at any time but after consultation with me, make such changes to this programme as he/she may deem necessary.

Signed on this _____ day of _____, 20____ at _____

Signature: _____

DMR APPROVAL

I, _____ [on behalf of the Department of Mineral Resources] hereby approve the Environmental Management Programme for KME and Exploration (Pty) Ltd – NES Project, compiled in accordance with the requirements of *Appendix 4 of GNR 982 – The Environmental Impact Assessment Regulations, 2014 – to the National Environmental Management Act, Act No. 107 of 1998 as amended.*

Signed on this _____ day of _____, 20____ at _____

Signature: _____

APPENDICES FOR PART A

APPENDIX A1: CV OF EAP

Abbreviated Curriculum Vitae

Andrew Charles Nicholson

PERSONAL DETAILS:

First names	Andrew Charles
Surname	Nicholson
ID number	740103 5108 086
Contact details:	
Business telephone	(011) 791 3389
Business cell	084 840 6316
Business facsimile	(011) 791 3384
E-mail	andrew@umhlaba.co.za
Home language	English

EDUCATION:

Degrees:

BSc Hon Biological Sciences (1992-1995).

Leicester University, Leicester, England. Grade: Upper Second

Post Graduate Diploma Natural Resources Management (1996-1997)

Leicester University, Leicester, England. *Research post / Environmental consulting:*
Scandioconsult, Box 5343, Gotenburg 40227, Sweden.

Courses and Workshops Attended:

Environmental Law Update Workshop

August 2017 – Presented by Imbewu Sustainability Legal Specialists (Pty) Ltd, Johannesburg

Technical Orientation on IFC's Performance

October 2014 – Johannesburg

GRI Course and Workshop on Sustainability Reporting

September 2013 – Presented by Environmental & Sustainability Solutions, Johannesburg

Mining Law Workshop

May 2013 – Presented by Imbewu Sustainability Legal Specialists (Pty) Ltd, Johannesburg

Contaminated Land Workshop

October 2012 – Presented by Imbewu Sustainability Legal Specialists (Pty) Ltd, Johannesburg

Air Quality Training

July 2010 – Presented by Imbewu Sustainability Legal Specialists (Pty) Ltd, Johannesburg

Mine Project Planning and Control

September 2009 – University of Witwatersrand, Johannesburg

Waste Laws Workshop

August 2009 – C.S Environmental Services

Third International Seminar on Mine Closure

October 2008 - Johannesburg

Writing and Reviewing Environmental Impact Assessments and Environmental Management Programmes

August 2006 – IAIAsa Conference, Pilanesberg, North West Province

ISO 14001 Bridging Course from 1996 to 2004 version. SABS Training

June 2006.

Environmental Law for Environmental Managers. Overall score: 86%

August 2005 - North West University

Practical Guidance for Developing and Compiling your Mining Social and Labour Plan.

March 2005 – Johannesburg.

Mineral and Petroleum Resources Development Act – In Operation.

July 2004 - Johannesburg

Water Institute of Southern Africa, Mine Water Division, Conference on Mine Closure.

October 2002 - Randfontein

EMPLOYMENT HISTORY:

Environmental Consultant

Umhlaba Environmental Consulting CC

January 2004 to present

I am one of the Founding Members of Umhlaba and my responsibilities include work such as:

- Managing the company
- Environmental Management Plans / Programme Reports.
- Amending existing Environmental Management Programme Reports to compile with the MPRDA
- Environmental Auditing of Environmental Management Programme Reports.
- EHS audits
- Liaison with Government Departments, on behalf of the clients.
- Compiling Mining and Prospecting Right Applications.
- Advising on all aspects of the Mineral and Petroleum Resources Development Act
- Closure Plan, Environmental Risk Report and Final Risk Assessment.
- Calculating Financial Provision for Environmental Rehabilitation.
- Environmental authorisations in terms of NEMA.
- Compiling environmental monitoring reports
- Due diligences
- Feasibility reports

Environmental Consultant

Blue Swallow Environmental Services (Pty) Ltd.

July 2002 to December 2003

Initially I was appointed as a Projects Manager to run various projects undertaken by the company. From June 2003 to December 2003, I was appointed the General Manager of the company which in addition to my allocation of various projects, I was responsible for the day to day running of the company. The majority of my work focussed around mining activities, with work undertaken by myself, including:

- Environmental Management Programme Reports (in terms of the Minerals Act, 1991).
- Pre-ISO Auditing.
- Environmental Impact Assessment Checklists.
- Liaison with Government departments, on behalf of the clients.
- Financial Provision documents.
- Rehabilitation plans and projects.
- Closure Reports.
- Tourism Marketing.

Camp Manager / Senior Game Ranger

Londolozi Safari Lodge, CCAfrica

January 2001 to May 2002

My responsibilities outside of being senior game ranger include helping with the day to day running of the lodge.

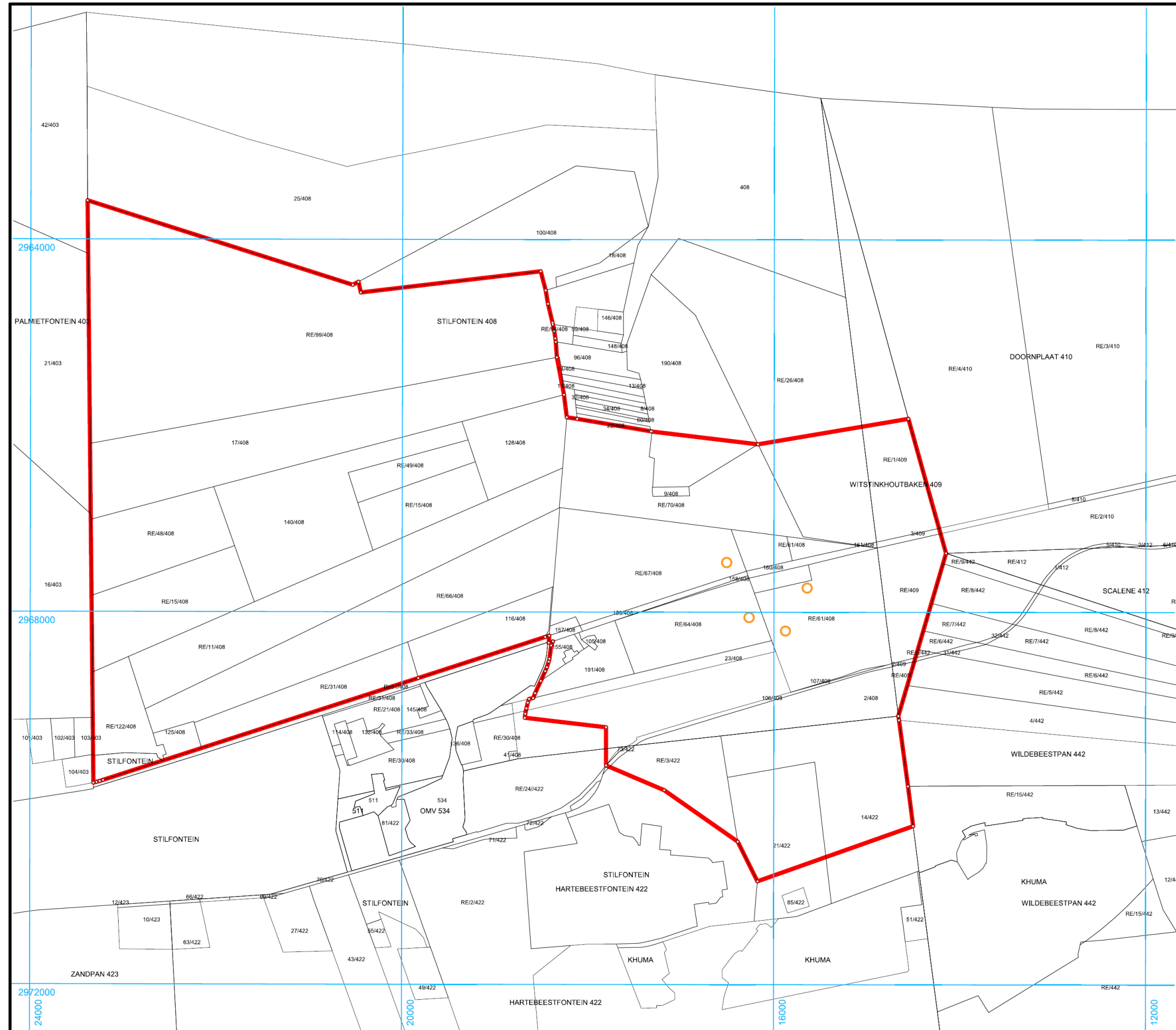
Game Ranger

Ngala Game Reserve, CCAfrica

January 1999 to January 2001

As well as rangers, I was also involved in the community development aspects of the lodge, organizing conservation lessons and taking an interest in the African Foundation Rural Investment funds work in the Welverdiend community adjacent to Ngala. For the month October 2000, I worked at Sandibe lodge, Okavango Delta, Botswana, where I was rangers and helping to manage the lodge.

APPENDIX A2: SITE LAYOUT PLAN



NES PROJECT

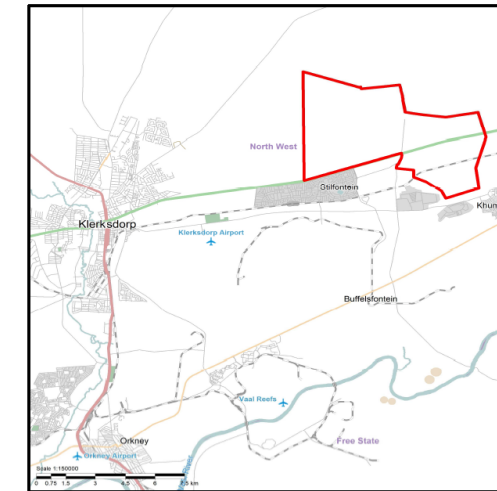
PROPERTY DESCRIPTION & OWNERSHIP

Farm Name	Portion No	Property owner	Title Deed No
Stilfontein 408	IP 12	Eagles Creek Golf Estate (Pty) Ltd	T103657/2006
Stilfontein 408	IP 19	Mount Olive Business Trust	T11817/2018
Stilfontein 408	IP 11	Caroline Stephanie van Schalkwyk	T21988/1994
Stilfontein 408	IP 15	Chemwes (Pty) Ltd	T18439/2005
Stilfontein 408	IP 17	Chemwes (Pty) Ltd	T54914/2012
Stilfontein 408	IP 21	Chemwes (Pty) Ltd	T98108/2014
Stilfontein 408	IP 23	Eagles Creek Golf Estate (Pty) Ltd	T103657/2006
Stilfontein 408	IP 26	B D Botha Family Trust	T33789/1999
Stilfontein 408	IP 31	Chemwes (Pty) Ltd	T18439/2005
Stilfontein 408	IP 38	M M U Trading Cc	T51068/2014
Stilfontein 408	IP 48	Chemwes (Pty) Ltd	T18439/2005
Stilfontein 408	IP 49	Chemwes (Pty) Ltd	T18439/2005
Stilfontein 408	IP 61	Eagles Creek Golf Estate (Pty) Ltd	T109568/2006
Stilfontein 408	IP 64	Eagles Creek Golf Estate (Pty) Ltd	T139565/2006
Stilfontein 408	IP 66	Chemwes (Pty) Ltd	T18439/2005
Stilfontein 408	IP 67	C-172n Wings Club	T166306/2006
Stilfontein 408	IP 70	Johanna Helena Delport	T7369/2010
Stilfontein 408	IP 99	Chemwes (Pty) Ltd	T54914/2012
Stilfontein 408	IP 105	North West Guns Cc	T14925/2016
Stilfontein 408	IP 106	Transnet Ltd	T44125/1996
Stilfontein 408	IP 107	Transnet Ltd	T1591/1996
Stilfontein 408	IP 108	Comm Trade 120 (Pty) Ltd	T72827/2008
Stilfontein 408	IP 116	Oranje Mynbou & Vervoer Mpy (Pty) Ltd	T88014/1997
Stilfontein 408	IP 122	Lynette Marie Mitchell	T3104/2009
Stilfontein 408	IP 125	Goue Weste Sport Klub vir Liggaamik Gestremdes	T129619/2004
Stilfontein 408	IP 128	Green Willows Prop 176 (Pty) Ltd	T9417/2010
Stilfontein 408	IP 140	Chemwes (Pty) Ltd	T39596/2009
Stilfontein 408	IP 155	Wild Break 218 (Pty) Ltd	T7648/2006
Stilfontein 408	IP 156	South African National Roads Agency Ltd	
Stilfontein 408	IP 157	South African National Roads Agency Ltd	
Stilfontein 408	IP 158	South African National Roads Agency Ltd	
Stilfontein 408	IP 159	South African National Roads Agency Ltd	
Stilfontein 408	IP 160	South African National Roads Agency Ltd	
Stilfontein 408	IP 161	South African National Roads Agency Ltd	T27137/2009
Stilfontein 408	IP 162	South African National Roads Agency Ltd	
Stilfontein 408	IP 190	Christian Carel Uys	T7368/2010
Stilfontein 408	IP 191	Noordkom Van Der Walt Trust	T98107/2014
Witsinkhoutbaker 409	IP 0	Neppo Farmers Trust	T168726/2006
Witsinkhoutbaker 409	IP 1	B D B Botha Family Trust	T33789/1999
Witsinkhoutbaker 409	IP 2	Transnet Ltd	T6046/1996
Witsinkhoutbaker 409	IP 3	South African National Roads Agency Ltd	
Hartebeestfontein 422	IP 3	City Council of Klerksdorp	T83537/1998
Hartebeestfontein 422	IP 14	Pierre Robert Blake	T4834/2010
Hartebeestfontein 422	IP 21	City Council of Klerksdorp	T83537/1998
Hartebeestfontein 422	IP 24	Chemwes (Pty) Ltd	T18439/2005
Hartebeestfontein 422	IP 73	Transnet Ltd	T7745/2001

LEGEND

- PROSPECTING AREA
- PROPERTY BOUNDARIES
- TARGETED BOREHOLES

LOCALITY MAP



NOT TO SCALE

SCALE 1: 20 000



APPENDIX A.3: RECORD OF PUBLIC PARTICIPATION DURING THIS BASIC ASSESSMENT PROCESS.

This section will be updated after the consultation period has been completed.

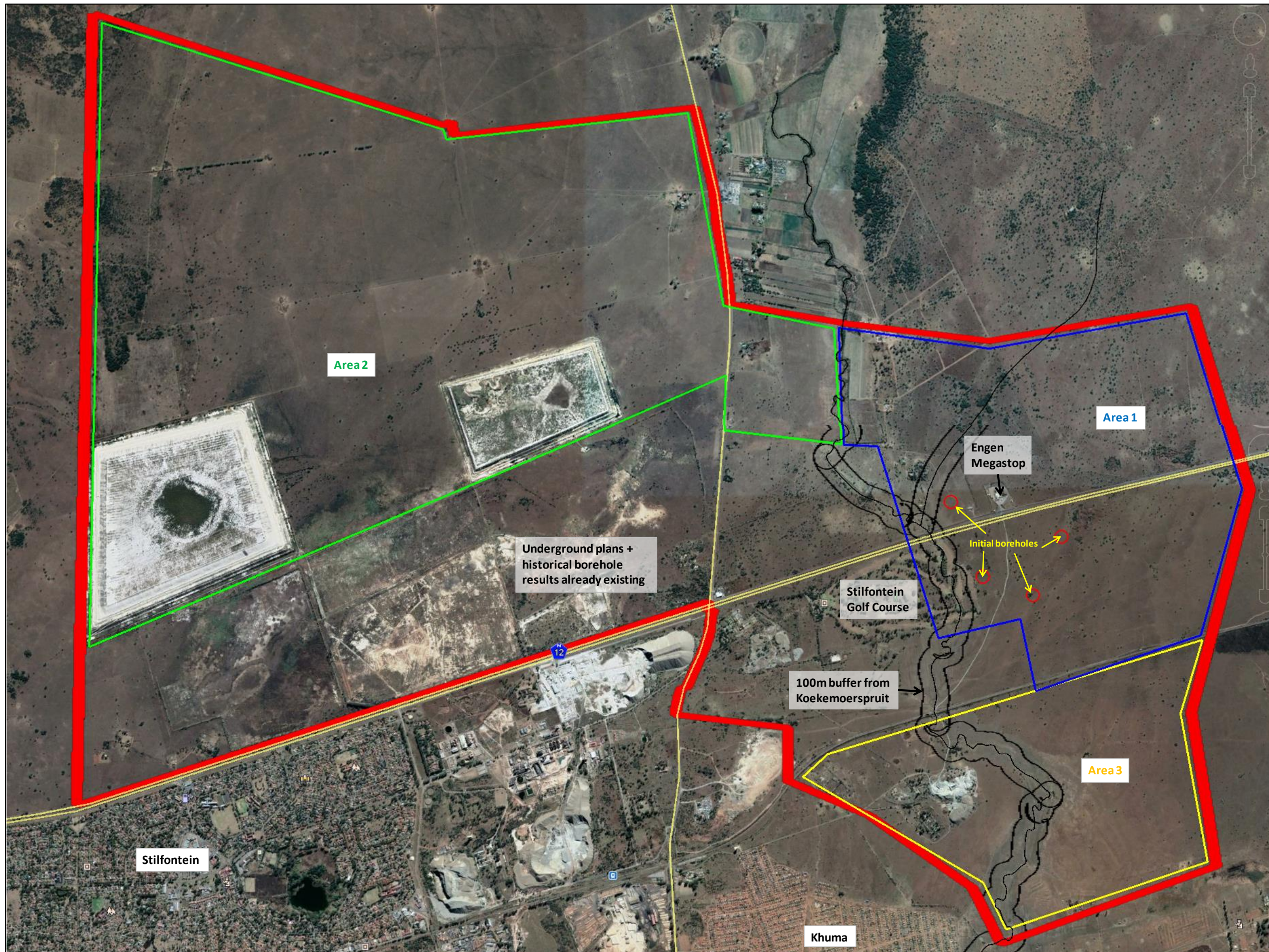
Appendix A.3.1. Documents used in Notification and Consultation Process and Public meeting

Appendix A.3.2. Feedback as received by I&AP's.

APPENDIX A.4: IMPACT ASSESSMENT REGISTER

Activity		Aspect	Source / Cause	Impact		Consequence				Probability	External Factors		Ranking	Controls / Management Measures Implemented				Significance (WITH controls)
Phase	Description of the physical activities that will cause the impacts		Description as to how the activity may cause the impact	A description of the impact that may result from the activity		Nature	Extent	Duration	Frequency		I&AP	Cumulative	Significance (WITHOUT controls)	Effective Engineering	Effective Procedural	Effective Training	Effective Monitoring / Maintenance	
1. Literature review	<ul style="list-style-type: none"> Literature review and desktop studies Analysis of results from historical boreholes Determining final location of initial drill site 	Socio-economic	Commencing with prospecting activities over the application area.	Potential decrease in property values Altering of the sense of place of the local area.	Neg	Medium	On-site	Long	Daily	Medium	No	No	Medium	No	Yes	No	Yes	Medium
2 & 3. Initial drilling and Infill drilling	Drilling (access track, drill pad, drilling, stores, security, core cutting, sampling, waste & sanitation)	Air quality	Dust entrainment from; stripping activities, using access tracks, implementing drilling and exhaust emissions	Dust fallout from prospecting activities	Neg	Low-Med	Neighbouring	Very short	Monthly	Low	No	Yes	Low-Medium	No	Yes	Yes	Yes	Low-Medium
		Noise nuisance	Noise generated from vehicle / drilling operations	increased ambient noise levels	Neg	Medium	Neighbouring	Very short	Monthly	Medium	No	Yes	Medium	No	Yes	Yes	Yes	Low-Medium
		Visual	Drill rig temporarily visible	visable drill rigs	Neg	Low-Med	Local	Very short	Monthly	Low	No	No	Low-Medium	No	No	Yes	Yes	Low-Medium
		Water	Pollution of surface water resource through oil spills / spills from chemical toilets impacting on local water course(s)	Pollution of a water resource	Neg	Medium	Regional	Short	6 Monthly	Low	No	Yes	Low-Medium	No	Yes	Yes	Yes	Low-Medium
		Soil	Soil is not stored for rehabilitation requirements / soil is altered through hydrocarbon spills, compaction or erosion	Degradation of soil quality effecting the ease to implement rehabilitation activities	Neg	Medium	On-site	Medium	Monthly	Low	No	No	Low-Medium	No	Yes	No	Yes	Low-Medium
		Fauna / flora (Ecology)	Stripping of flora and impacting on habitats when clearing a drill pad area or creatung a new access track.	Destruction of flora and impact on habitats	Neg	Medium	On-site	Medium	Monthly	Medium	No	No	Low-Medium	Yes	No	No	No	Low-Medium
		Heritage	Clearing of area for the drill pad may effect a heritage resource.	impacting a heritage resource	Neg	Med-High	On-site	Very short	Monthly	Improbable	No	No	Low	No	Yes	Yes	Yes	Low
		Social	Unauthorised access to land. Lack of consideration of landowners requests. Not rehabilitating land.	Unhappy landowners / land occupiers	Neg	Med-High	On-site	Long	Monthly	Medium	Yes	Yes	Medium	Yes	Yes	Yes	No	Low-Medium
Concurrent rehabilitation	Concurrent rehabilitation of drill pads upon completion of drilling activities	All environmental aspects and socio-economic impacts on interested and affected parties	Implementation of sucessful concurrent rehabilitation activities	Reverse the temporary negative impacts associated with the drilling activities.	Pos	Medium	On-site	Medium	Monthly	High	No	No	Medium	Yes	Yes	No	Yes	Medium
4. Documentation	Resource statement Prefeasibility study Specialist studies Bankable feasibility study Preparation for Mining Authorisation	All environmental aspects and socio-economic impacts on interested and affected parties	Specialist requiring access to properties to complete various studies	Social impacts	Neg	Low-Med	On-site	Very short	6 Monthly	Low	No	No	Low	No	Yes	Yes	Yes	Low

APPENDIX A5: SITE MAP



APPENDIX A6: SOCIO-ECONOMIC ASSESSMENT

The application area is located immediately north and east of the town Stilfontein in the North West Province of South Africa which in turn is located approximately 10km east of the provinces largest city, Klerksdorp (renamed Matlosana). The greater city area incorporates the towns of Orkney, Kanana, Stilfontein, Khuma, Hartbeesfontein and Tigane. This area forms the economic heart of the province and is one of the hubs of the South African gold mining industry, although its importance has been decreasing in recent years. Apart from mining, the city area is positioned as a notable medical, retail and educational centre for the province and Northern Free State and is also a major contributor to South African agriculture in terms of maize, sorghum, groundnuts and sunflowers. The farming district is also known for its Sussex cattle herds where the city is the headquarters of the South African Sussex Cattle Breeders Association.

The following information has been taken directly from the Integrated Development Plan for the City of Matlosana (2017-2022) within which the application area is located.

According to estimates based on the population growth rate of SA Statistics (1.04%) and the Matlosana Socio- Economic Report of 2012, the City of Matlosana has a total population of 438 486 people, of whom 403 407 (92%) are urbanised and 35 079 (8%) are rural. (Mining villages form part of the urban areas). The largest population concentrations are in Jouberton (31%), Kanana, Khuma and Tigane, which represent 67% of the total urban population. Population density is estimated at 123 persons per km². The population distribution is indicated on Figure 23. Population growth and household growth has declined over time. This can be ascribed to the fact that the local economy has become less dependent on the mining sector with the tertiary sectors growing in the long term.

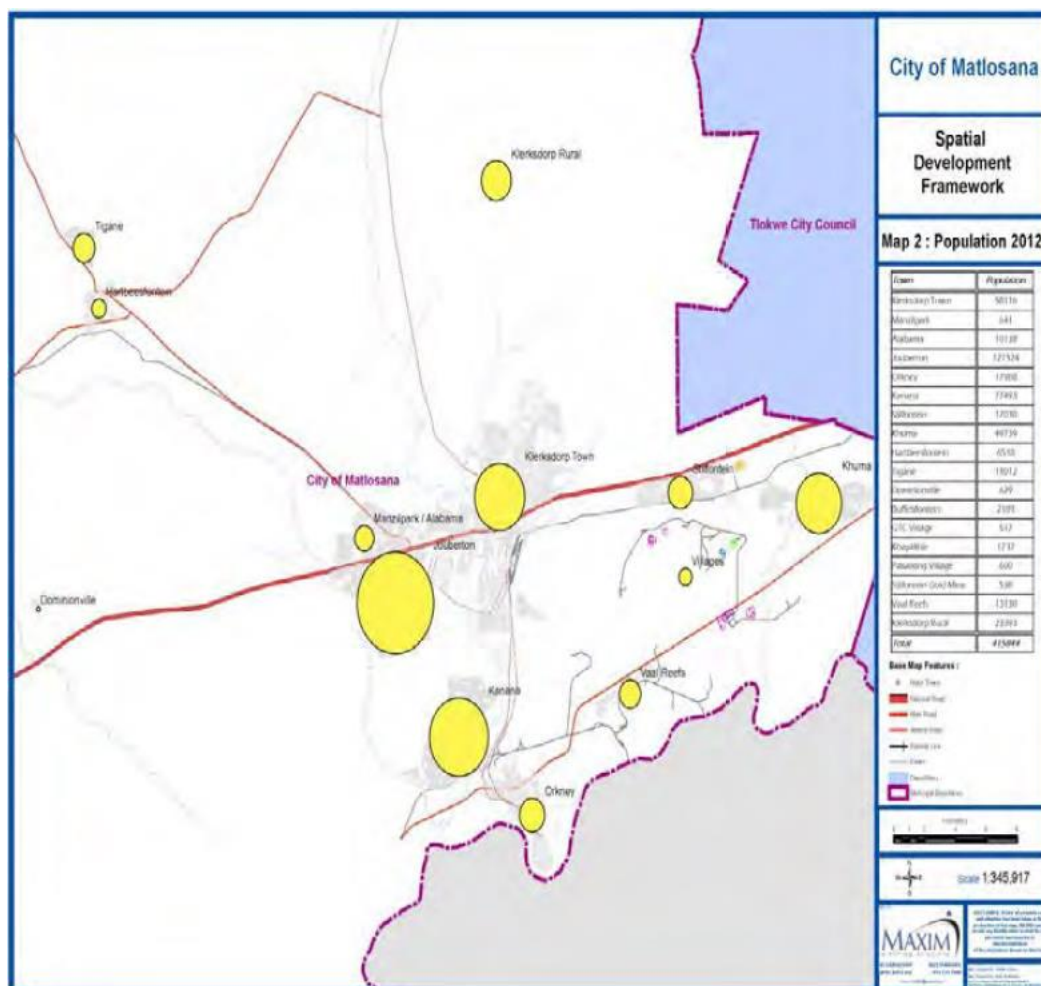


Figure 23: Population distribution map for the City of Matlosana.

SOCIO ECONOMIC STATUS						
Year	Housing Backlog as proportion of current demand	Un-employment Rate	Proportion of Households with no Income	Proportion of Population in Low-skilled Employment	HIV/AIDS Prevalence	Illiterate people older than 14 years
2014/15	21%	24%	26%	52%	20%	44%
2015/16	22%	25%	27%	55%	18%	42%
2016/17	22%	33%	16%	55%	18%	41%

Since the early 1990s but more specifically since 2001, mining activities have downscaled drastically. This downscaling also leads to nearly 80% of the original workforce in 1996 being retrenched by 2016. The declining mining industry has resulted in the number of people living in poverty in the City of Matlosana almost doubling between 1996 and 2016.

Currently, the N12 Treasure Route puts Klerksdorp in the centre of new developments. Towards the west of the N12, developments comprise residential development, retail nodes and mixed land usages. This is where the Rio Tusk Casino and Shell garage (future truck inn) was developed as well as a Tower Mall who opened at the end of 2013. Towards the east of this corridor the new Matlosana Mall opened at the end of 2014. This development has also affected the decentralisation of business into the Northern suburbs of Klerksdorp and business activities along the N12.

Population and household growth have slightly increased over time. The average annual population growth between 2011 and 2016 was 1.04% and the average annual household growth between 1996 and 2016 was 3.46%. The household growth has increased over time and in 2015/16 the growth rate was at 1.04%. Population growth showed a slower increase and was at 0.35% in 2016.

APPENDIX A7: HERITAGE ASSESSMENT

No specific sites of cultural heritage importance have been identified to date within the proposed application area. Figure 24 and Figure 25 provide the relative sensitivities as identified by the National Environmental Screening Tool for archaeological/cultural heritage and paleontological themes respectively. This suggests that while no sites have been identified to date, there is a high archaeological and cultural heritage sensitivity along the Koekemoerspruit and a medium sensitivity in the very north west section of the application area where sites could potentially be found. There are however no sensitive areas identified within the application area for potential paleontological sites.

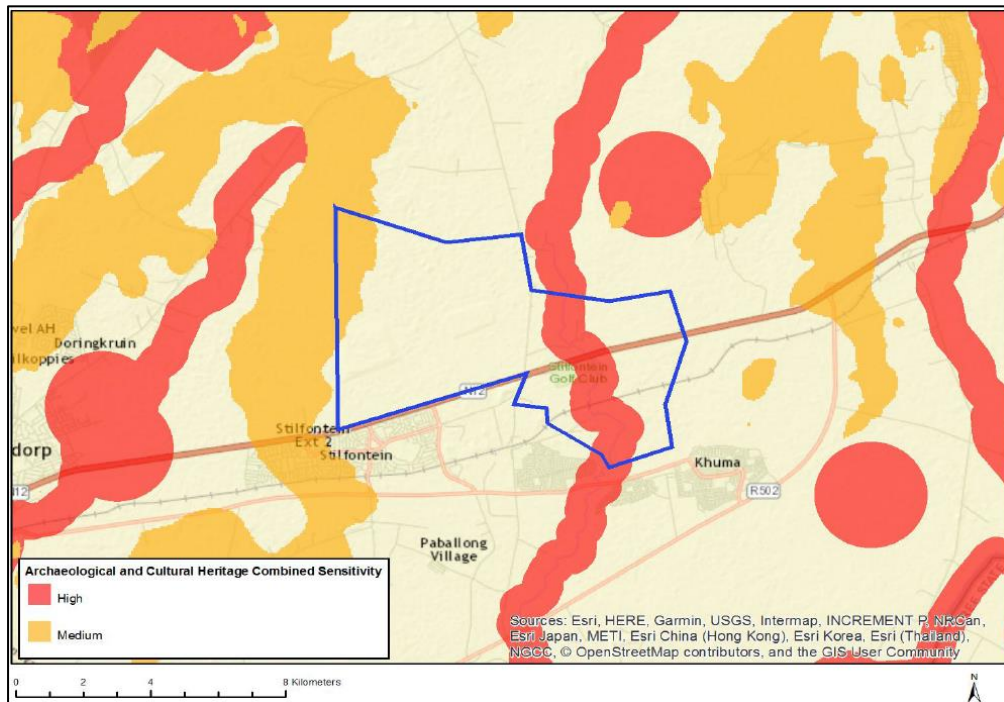


Figure 24: Relative archaeological and cultural heritage sensitivity within and surrounding the application area.

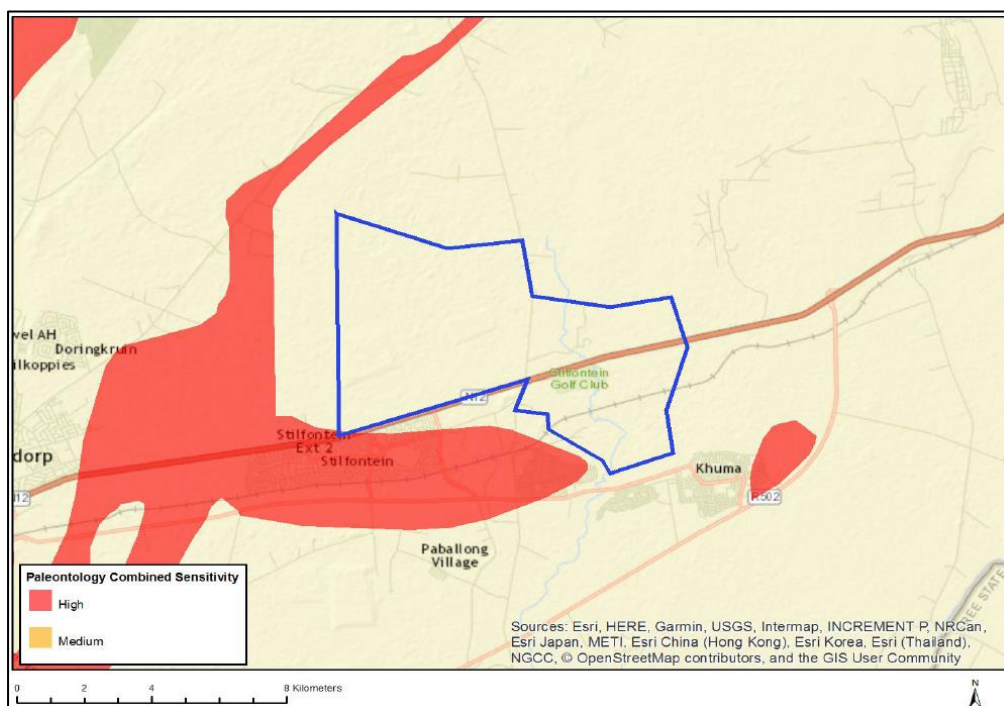


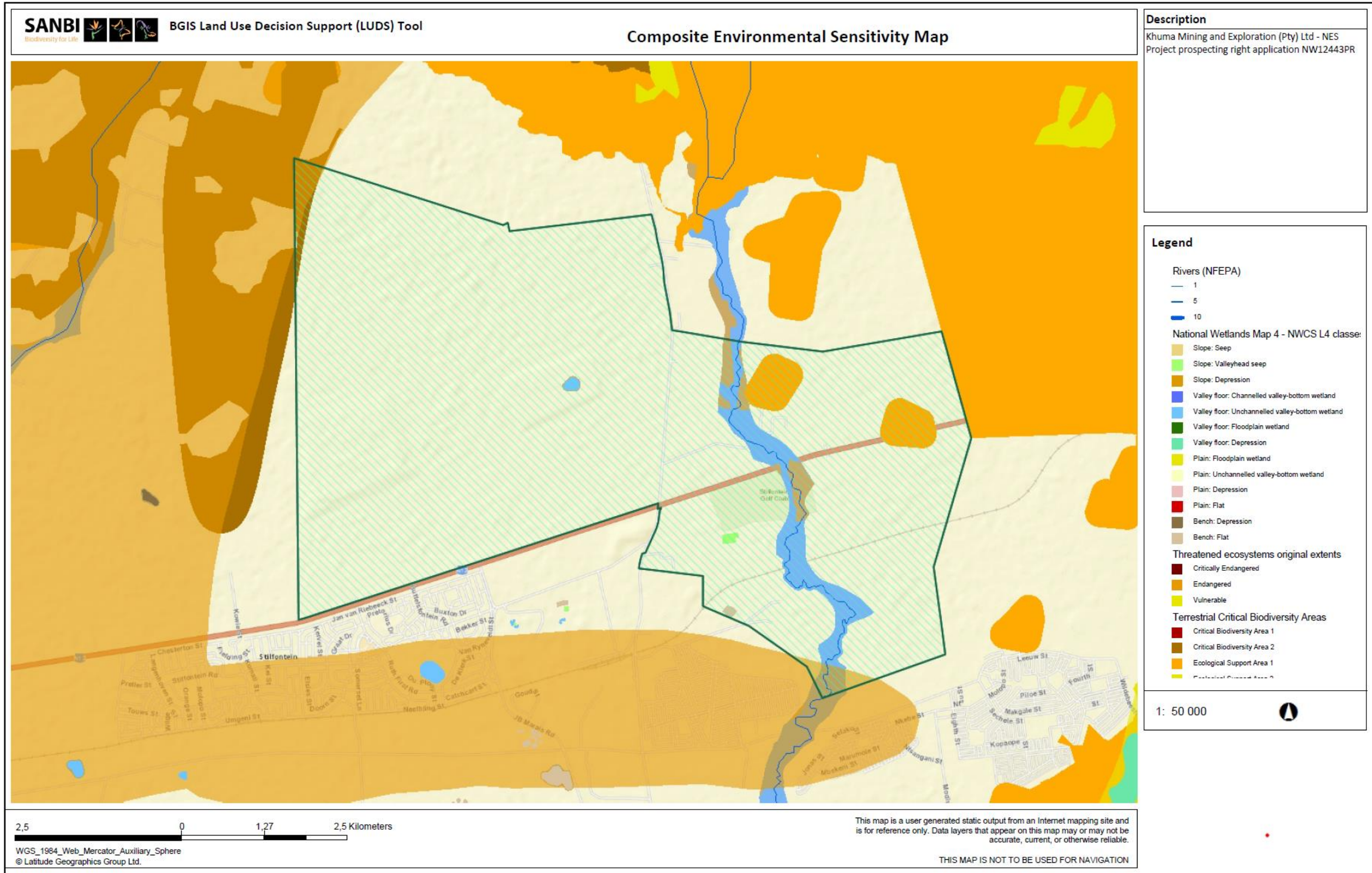
Figure 25: Relative paleontological sensitivity within and surrounding the application area.

APPENDIX A8: MOTIVATION WHERE NO ALTERNATIVES ARE CONSIDERED

No alternatives have been considered with regards to prospecting activities as the site layout proposed in Appendix A2 is defined by the available geological information and historical mining results pertaining to the application area. Once the resource is better known, alternatives could be considered as part of the feasibility studies for potential mining.

APPENDICES FOR PART B

APPENDIX B1: COMPOSITE MAPS SHOWING ENVIRONMENTAL SENSITIVITY



APPENDIX B2: IMPLEMENTATION PLAN

Implementing Drilling Activities:

Management objectives: The main management objectives for the invasive drilling activities are;

- Avoid potential impacts by positioning the drill sites in a manner which avoids / minimise potential impacts. This can be achieved by implementing appropriate buffer zones.
- Reduce impacts through implementing realistic operational management measures such as imposing restrictions on the time of day when drilling can take place.
- Restore the physical impact of drilling through implementation of concurrent rehabilitation as and when drilling at one site is completed.
- Use the results of drilling to determine viability of future mining project.

Desired Management outcomes: Through implementing the above objectives the desired outcomes are;

- Implement a drilling programme that does not impact on any sensitive environmental feature
- Implement a drilling programme with the consent of the applicable landowner
- Ensure that all temporary impacts are minimised
- Once complete there should be no evidence that the drilling activities took place.

The following management measures will be implemented to assist in the implementation of effective environmental management during the drilling activities.

MANAGEMENT MEASURES		
GENERAL MANAGEMENT MEASURES		Compliance
<ul style="list-style-type: none"> • Prior to the implementation of drilling activities the drilling contractors will undergo environmental awareness training to inform drillers of the sensitivity of; <ul style="list-style-type: none"> - The sensitivity of water courses, wetlands and other ecological features such as termite mounds. - The need to avoid pollution of the soil by ensuring hydrocarbon spills are minimized or if they do occur they are cleaned up. - The need to implement effective waste management (separation of domestic & hazardous waste) - Do not unnecessarily disturb any wildlife - Good behavior in terms of interaction with the land owner and local community when implementing drilling 		•
<ul style="list-style-type: none"> • Chemical toilets to be provided at the drill site for sanitation requirements. 		•
<ul style="list-style-type: none"> • Only well maintained drill rigs with a service history to be used during the drilling campaign 		•
<ul style="list-style-type: none"> • At each drill site the drill equipment will be positioned on a plastic lining when not in use to prevent possible spillages. 		•
<ul style="list-style-type: none"> • Only biodegradable lubricants will be used during the drilling operations. 		•
<ul style="list-style-type: none"> • All chemicals required for the duration of the surface drilling operation will be stored in a sealed container at the established drill site. <ul style="list-style-type: none"> - Spillages of hydrocarbon liquids will be cleaned up immediately and placed in a sealed container and disposed of appropriately. - Diesel container / bowser will be housed on a plastic lined area when on site. 		•
MEASURES TO BE IMPLEMENTED PRIOR TO IMPLEMENTING THE DRILLING PROGRAMME		
<ul style="list-style-type: none"> • Consultation with affected landowner. 	<ul style="list-style-type: none"> • 1 month prior to implementing any drilling the applicable landowner/developer must be re-consulted. • Record of consultation must be kept on file • Reasonable request from the landowner must be considered and where possible addressed 	•
<ul style="list-style-type: none"> • Planning access routes. 	<ul style="list-style-type: none"> • Drill site positions should be located, as close as possible, to an existing road or access track. • Unnecessary tracks will be avoided. • If a new track is required, the same track will be used to access and exit the area. • Any new access tracks must avoid termite mounds and trees • No new access tracks will be created which cross a water course or wetland. (only existing roads / tracks will be used). 	•
<ul style="list-style-type: none"> • Positioning of the drill pads 	<ul style="list-style-type: none"> • The final positioning of the drill site will where feasible, adhere to the following minimum distances: <ul style="list-style-type: none"> - Ideally maintain 100m away from any occupied house (minimum of at least 50m). - Maintain at least 100m away from the closest edge of the water course. - Maintain a 50m buffer from any identified wetland (see specialist studies) - Maintain at least 50m away from any other structures / heritage sites (see specialist studies) - No trees to be cut down - Avoid all established termite mounds 	•
<ul style="list-style-type: none"> • Securing water requirements 	<ul style="list-style-type: none"> • Potable water to be brought onto site daily • Drilling water to be obtained from a legal source within the area. 	•

MANAGEMENT MEASURES		
<ul style="list-style-type: none"> ● Photographic gallery 	<ul style="list-style-type: none"> ● Prior to commencing any invasive activities a photographic gallery of the current state of the area to be subjected to disturbance must be recorded. Photographs should be taken of: <ul style="list-style-type: none"> - Each proposed drill pad - The status of existing access routes - The status of the environment on planned new access tracks. - Any other area subjected to invasive activities. - These photographs will be used to prove effective rehabilitation. 	●
<ul style="list-style-type: none"> ● Securing of the drilling activities 	<ul style="list-style-type: none"> ● Applicable warning signs to be erected during drilling ● Access to drill site area to be restricted to authorised personnel only 	●
<ul style="list-style-type: none"> ● Accommodation requirements 	<ul style="list-style-type: none"> ● Existing accommodation in the area to be used for the drillers ● Only security to be allowed to stay at drill sites on a permanent basis 	●
MEASURES TO BE IMPLEMENTED DURING THE DRILLING PROGRAMME		
<ul style="list-style-type: none"> ● Potential for soil degradation 	<p>Drill sites: The following topsoil management measures are applicable for the drill sites and drilling;</p> <ul style="list-style-type: none"> ● Each site will only be developed a maximum time of 1 week prior to it being used and only once drilling in the area is confirmed. No drill sites to be created unnecessarily. ● The topsoil from the area to be drilled will be moved aside and stored next to the drilling operation. ● Topsoil (top 50cm) and overburden will be kept separate (if applicable). ● The drill equipment will be on a plastic lining when not in use to ensure that no unnecessary soil pollution will occur. Upon completion of the drilling programme the soil will be returned to the exact area that it was moved from. Overburden will be replaced first followed by topsoil. ● If a sump is required - the soil moved to dig the sump will be located next to the sump. The sump will be lined with plastic. After completion of drilling, the plastic lining will be removed from the sump and disposed of in a registered landfill site and the soil moved to generate the sump will be replaced. ● Any chemicals stored at the drill site which could pollute soil if spilt will either be stored within a protected container or in the case of a diesel container on a plastic lined area. <ul style="list-style-type: none"> - The plastic lining must be large enough to cope with minor spillages and leaks. ● Any soil polluted as a result of a hydrocarbon spill will be dug up and disposed of as hazardous waste. <p>Maintenance: The following will be applicable with regards to the carrying out of maintenance;</p> <ul style="list-style-type: none"> ● Only minor maintenance may occur on-site with use of drip trays and / or on a plastic lining. ● Major maintenance activities must be undertaken off-site. ● Any chemical spillages must be cleaned up immediately and be dealt with as hazardous waste. 	●

MANAGEMENT MEASURES		
<ul style="list-style-type: none"> ● Potential impact on Fauna and Flora 	<ul style="list-style-type: none"> ● Access route will be developed to avoid any trees or termite mounds if present. ● Once drilling is completed at a site, concurrent rehabilitation will be implemented. 	<ul style="list-style-type: none"> ●
<ul style="list-style-type: none"> ● Potential impact on water resources 	<p>The impact of any of the invasive activities on water resources will be minimised by:</p> <ul style="list-style-type: none"> ● No invasive activity will take place within 100m of the closest edge of the water course. ● A 50m buffer from a wetland will be respected (see specialist studies) ● All potentially polluting chemicals will be stored within a demarcated protected area. ● Any chemical spills that may occur will be cleaned up immediately and the polluted material removed as hazardous waste. ● Need to ensure that any water intersection identified during drilling is included within the borehole logs. ● Drilling inspection checklist will be used on a daily basis to force drillers to check the rig for potential spills. Any problems identified during the inspections must be rectified. 	<ul style="list-style-type: none"> ●
<ul style="list-style-type: none"> ● Air quality 	<ul style="list-style-type: none"> ● Staff will be supplied with the appropriate PPE. 	<ul style="list-style-type: none"> ●
<ul style="list-style-type: none"> ● Potential impact of noise 	<ul style="list-style-type: none"> ● When drilling occurs in an area that can be heard by surrounding residents, drilling activities will be restricted to daylight hours (unless permission to drill for longer is obtained from the closest community). Documented proof of this permission must be maintained. ● Staff will be supplied with the appropriate PPE. ● The timing of implementing drilling programme is not set. If necessary certain drill sites can be timed to occur during school terms. This will be confirmed during the pre-drilling consultation. 	<ul style="list-style-type: none"> ●
<ul style="list-style-type: none"> ● Potential impact on interested and affected parties 	<ul style="list-style-type: none"> ● Any complaint received by an interested and affected party will be recorded in a complaints book, investigated immediately and the cause of the complaint will, if possible, be rectified. 	<ul style="list-style-type: none"> ●
<ul style="list-style-type: none"> ● Waste management requirements 	<ul style="list-style-type: none"> ● At all sites where invasive activities are implemented, separate containers will be provided for the collection of both domestic and hazardous waste. Ideally these containers should be labelled so as to facilitate separation of different waste streams. ● The containers should be located in an area that is protected from surface water run-off. ● Domestic and hazardous waste will be disposed of separately and appropriately. ● Inspections at each of the sites where invasive activities are taking place will be implemented to ensure that correct waste management practices are being applied. 	<ul style="list-style-type: none"> ●
<ul style="list-style-type: none"> ● Monitoring commitments 	<p>Inspections will cover the following (see table below):</p> <ul style="list-style-type: none"> ● Implement daily equipment checks for potential hydrocarbon spills ● Implementation of effective waste management ● Discuss if any concerns have been raised ● Evidence of any hydrocarbon pollution ● Rehabilitation of completed drill sites ● The appropriate storage of topsoil. 	

MANAGEMENT MEASURES		
<ul style="list-style-type: none"> ● Administrative commitments 	<p>Documentation requirements:</p> <ul style="list-style-type: none"> ● At least the following environmental documentation must be maintained on file: <ul style="list-style-type: none"> - A copy of the approved mining right - A copy of the EMPR - A copy of all environmental communication with the DMR - A copy of the photographic gallery - A copy of the weekly inspection reports - Details of any complaints that may have been raised 	
MEASURES TO BE IMPLEMENTED UPON COMPLETION OF THE DRILLING PROGRAMME		
<ul style="list-style-type: none"> ● Closure & environmental objectives 	<p>After invasive prospecting is complete, the land will be reverted back to its original condition.</p> <ul style="list-style-type: none"> ● (New) Access routes: Will be rehabilitated with the aim to return the road to its original state. Existing access routes will be left in the same state they were found. ● Drill pads: After drilling has been completed in one area, the drilling team will ensure the site is reverted back to its original by: <ul style="list-style-type: none"> - Removing all infrastructures, such as the drill equipment and the chemical toilet. - Infilling the boreholes as per legal requirements. - Ensure that no foreign matter (waste) is left behind on the drill site. - Refilling the sump required for the drilling activities (if applicable). Initially the plastic lining will be removed and disposed on in a registered landfill site and the soil returned to effectively fill in the sump. - The whole drill site will be inspected for any signs of hydrocarbon pollution. Any identified soil which has been polluted as a result of the drilling activities will be removed and disposed of in a registered landfill site. - Any area compacted as a result of the drill rig will be tilled. 	
	<ul style="list-style-type: none"> ● Upon completion of the drilling programme another set of photographs of the access route and the individual drill site after the implementation of concurrent rehabilitation will act as proof of rehabilitation to its original state / improvement to the original state. ● These photographs will be maintained on file. ● The applicable landowner will be requested to inspect the rehabilitated drill sites and if willing sign off acceptance of rehabilitation. ● Upon completion of the drilling activities, each site will be monitored for the next year on a bi-annual basis to ensure that no environmentally related problems resulting from the drilling activities has occurred and that the drill sites are re-vegetating naturally. 	

DRILLING WEEKLY INSPECTION REPORT	
<ul style="list-style-type: none"> • Have daily equipment checks been undertaken? • Is waste management been implemented effectively? • No littering on site? • Separation of domestic and hazardous waste? • Proof of proper disposal of waste? 	
<ul style="list-style-type: none"> • Has any complaints or concerns be raised? • Has any interaction occurred with surrounding community members? If yes what was the results of the interaction 	
<ul style="list-style-type: none"> • Any evidence of any hydrocarbon spills at the drill sites? • Have polluted soil been cleared up? 	
<ul style="list-style-type: none"> • Have completed drill sites been rehabilitated in accordance with the environmental management plan? 	
<ul style="list-style-type: none"> • Is the chemical toilet available and clean? 	
<ul style="list-style-type: none"> • If topsoil is removed - is topsoil been stored, protected and used properly? 	
<ul style="list-style-type: none"> • Is all chemicals (including diesel) been housed on a protected plastic lining? 	
<ul style="list-style-type: none"> • Are access tracks been kept to a minimum? 	

Implementing additional specialist studies:

At minimum the following will be implemented for any specialist study commissioned during prospecting (such as groundwater studies, baseline air quality assessments, baseline noise assessments etc):

Management Measures: The main management measures for the specialist studies are;

- Prior to commencing with the site visit of any specialist study, the affected landowner needs to be re-consulted. During this re-consulting the landowner needs to be made aware of the following;
 - Date that the specialist intends to access the land
 - Duration that the specialist will require on the land
 - Details of any person who will form part of the specialist team
 - Details of the activity the specialist will undertake on the property
- All reasonable requests from the landowner (during the consultation) must be implemented
- The applicable landowner should be provided / informed of the outcomes of the specialist study once completed.