mineral resources
Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORT

AND

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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

NAME OF APPLICANT: DE BEERS CONSOLIDATED MINES PROPRIETARY LIMITED

TEL NO: (053) 839 4243

FAX NO: (053) 839 4880

POSTAL ADDRESS**:** PO Box 616, Kimberley, 8300

PHYSICAL ADDRESS**:** 36 Stockdale Street, Kimberley, 8300

FILE REFERENCE NUMBER SAMRAD: NW 30/5/1/1/2/11998 PR

1. IMPORTANT NOTICE

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

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

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

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

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

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 focused on determining the geographical, physical, biological, social, economic, heritage , and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on the 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;

(bba). may cause irreplaceable loss of resources; and

(cca). 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 ASSESSMENT REPORT

3. Contact Person and correspondence address

a) Details of:

i. Details of the EAP:

Name of the Practitioner:	Theophillus Twarisani Rikhotso
Tel No.:	(011) 309 3600
Cell No.:	(071) 959 2602
Fax No.:	(011) 309 3184
e-mail address:	Theophillus.rikhotso@debeersgroup.com

ii. Expertise of the EAP

(1) The qualifications of the EAP

(with evidence).

Theophillus T. Rikhotso holds a National Diploma in Environmental Sciences from the Tshwane University of Technology including various Environmental Management certificates such as Environmental Law for Environmental Managers, Environmental Management System implementations such as Audits, Ecological Rehabilitation and Mine Closure, Water Quality Monitoring and Environmental Impact Assessment: a practical approach.

(2) Summary of the EAP's past experience *(In carrying out the Environmental Impact Assessment Procedure)*

Mr Rikhotso has 7 years of experience in the environmental management field ranging from environmental consulting, both opencast and underground coal mining and diamond exploration. Since August 2013, Mr Rikhotso has been involved in the compilation of the De Beers RSA explorations' Basic Assessment and Environmental Management Programme Report (BA & EMPr) in terms of National Environmental Management Act (107/1998): 2014 Environmental Impact Assessments Regulation, including Public participation and Environmental Management Programme Report Performance Assessment (EMPR PAR).

During his time with Anglo American Thermal Coal, between 2013 and, 2009 he was involved in the implementation of Environmental Authorization conditions such as Water Use Licence conditions, EMPR conditions and commitments. He was also responsible for the development, implementation and maintenance of Environmental Management Systems for both underground and opencast coal operations.

During his time spent in the consulting field, i.e. in 2008, he was involved in the compilation of Amendment Application for environmental authorization and drafting Background Information Documents for Gautrain Rapid Rail Link. He drafted the Molopo-Nosob River- Drafting Environmental Status Quo. Grotas - Evaluation of EMP and scoping reports for compliance with legislation. Chobe/Zambezi River- Drafting Newsletters, compilation of EMP for water pipeline which runs between Botswana, Namibia and South Africa. He was organizing Focus Group Meetings for interested and affected parties. Map work-

Identification of properties that were not affected by the authorized alignment Gautrain Railway line, but affected by the horizontal and/or vertical re-alignment on plans and communicate the new impact and mitigation in terms of vibration and noise pollution to landowners.

b) Location of the overall Activity

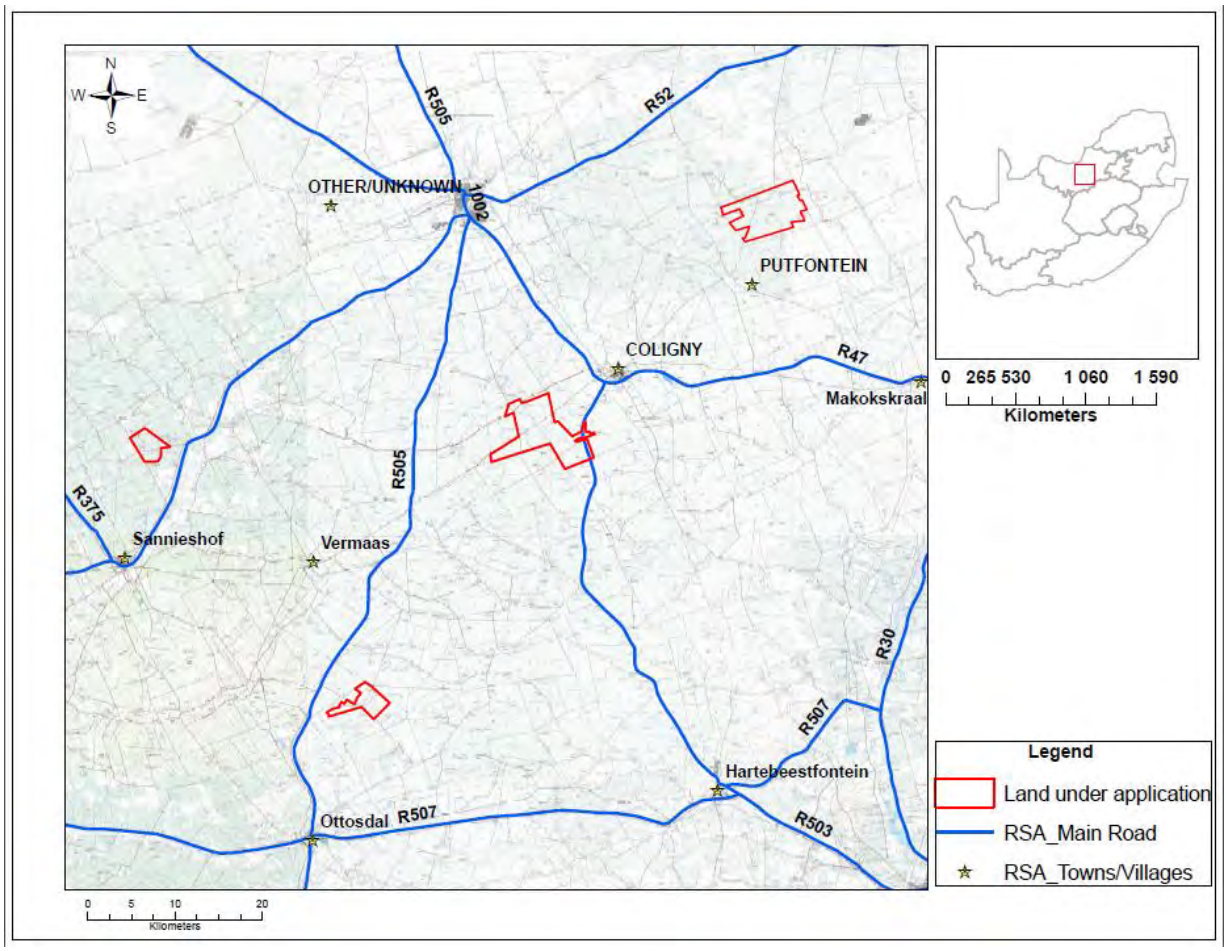
Farm Name:	HOLFONTEIN 147 IO(11of Ptn 3) HOLFONTEIN 147 IO(Ptn 34 of Ptn 30) HOLFONTEIN 147 IO(12 of Ptn 3) HOLFONTEIN 147 IO(Ptn 35 of Ptn 7) HOLFONTEIN 147 IO(Ptn 7 RE (of Ptn 3) KAREEBOSCHBULT 76 IP(Ptn 2) KAREEBOSCHBULT 76 IP (Ptn 1) OPPASLAAGTE 100 IP(Ptn 1) OPPASLAAGTE 100 IP(Ptn 5) KAREEBOSCHBULT 76 IP(RE) OPPASLAAGTE 100 IP(Ptn 13) OPPASLAAGTE 100 IP(Ptn 14) OPPASLAAGTE 100 IP(Ptn 6 (of Ptn 3) OPPASLAAGTE 100 IP(Ptn 7 (of Ptn 3) SLYPSTEEN 102 IP(Ptn 25 (of Ptn 24) OPPASLAAGTE 100 IP(Ptn 2) OPPASLAAGTE 100 IP(Ptn 4) OPPASLAAGTE 100 IP(RE) SLYPSTEEN 102 IP(Ptn 30) TWEE BUFFELS GESCHIET 42 IP(Ptn 11) TWEE BUFFELS GESCHIET 42 IP(Ptn 21 of Ptn 4) TWEE BUFFELS GESCHIET 42 IP(Ptn 24 of Ptn 1) TWEE BUFFELS GESCHIET 42 IP(Ptn 4 of RE) TWEE BUFFELS GESCHIET 42 IP (Ptn 46 of RE) TWEE BUFFELS GESCHIET 42 IP (Ptn 12) TWEE BUFFELS GESCHIET 42 IP(Ptn 13) TWEE BUFFELS GESCHIET 42 IP (Ptn 20 of 4) TWEE BUFFELS GESCHIET 42 IP (Ptn 42 of Ptn 27) TWEE BUFFELS GESCHIET 42 IP (Ptn 55) TWEE BUFFELS GESCHIET 42 IP (Ptn 56) TWEE BUFFELS GESCHIET 42 IP(Ptn 19 of 6) TWEE BUFFELS GESCHIET 42 IP(Ptn 37 of Ptn 31) TWEE BUFFELS GESCHIET 42 IP(Ptn 39 of Ptn 8) TWEE BUFFELS GESCHIET 42 IP(Ptn 41 of 8) TWEE BUFFELS GESCHIET 42 IP (Ptn 43 of Ptn 9) TWEE BUFFELS GESCHIET 42 IP (Ptn 47 of 6) TWEE BUFFELS GESCHIET 42 IP (Ptn 52 of RE) TWEE BUFFELS GESCHIET 42 IP (Ptn 53 of Ptn 52) TWEE BUFFELS GESCHIET 42 IP(Ptn 6 RE) BOSHOFFS RUST 258 IP (Ptn 6 of Ptn 1) BOSHOFFS RUST 258 IP (Ptn 13 of Ptn 5) BOSHOFFS RUST 258 IP (Ptn 5 of Ptn 1) RHENOSTERPUT 257 IP (Ptn 1 of RE)
Application area (Ha)	9243.0078ha
Magisterial district:	Ngaka Modiri Molema District Municipality
Distance and	60km north-west of Klerksdorp

direction from nearest town	
21 digit surveyor General Code for each farm portion	HOLFONTEIN 147 IO(11of Ptn 3)-T0IO00000000014700011 HOLFONTEIN 147 IO(Ptn 34 of Ptn 30)-T0IO00000000014700034 HOLFONTEIN 147 IO(12 of Ptn 3)-T0IO00000000014700012 HOLFONTEIN 147 IO(Ptn 35 of Ptn 7)-T0IO00000000014700035 HOLFONTEIN 147 IO(Ptn 7 RE (of Ptn 3)-T0IO00000000014700007 KAREEBOSCHBULT 76 IP(Ptn 2)-T0IP00000000007600002 KAREEBOSCHBULT 76 IP (Ptn 1)-T0IP00000000007600001 OPPASLAAGTE 100 IP(Ptn 1)-T0IP00000000010000001 OPPASLAAGTE 100 IP(Ptn 5)-T0IP00000000010000005 KAREEBOSCHBULT 76 IP(RE)-T0IP00000000007600000 OPPASLAAGTE 100 IP(Ptn 13)-T0IP00000000010000013 OPPASLAAGTE 100 IP(Ptn 14)-T0IP00000000010000014 OPPASLAAGTE 100 IP(Ptn 6 (of Ptn 3)-T0IP00000000010000006 OPPASLAAGTE 100 IP(Ptn 7 (of Ptn 3)-T0IP00000000010000007 SLYPSTEEN 102 IP(Ptn 25 (of Ptn 24)-T0IP00000000010200025 OPPASLAAGTE 100 IP(Ptn 2)-T0IP00000000010000002 OPPASLAAGTE 100 IP(Ptn 4)-T0IP00000000010000004 OPPASLAAGTE 100 IP(RE)-T0IP00000000010000000 SLYPSTEEN 102 IP(Ptn 30)-T0IP00000000010200030 TWEE BUFFELS GESCHIET 42 IP(Ptn 11)- T0IP00000000004200011 TWEE BUFFELS GESCHIET 42 IP(Ptn 21 of Ptn 4)- T0IP00000000004200021 TWEE BUFFELS GESCHIET 42 IP(Ptn 24 of Ptn 1)- T0IP00000000004200024 TWEE BUFFELS GESCHIET 42 IP(Ptn 4 of RE)- T0IP00000000004200004 TWEE BUFFELS GESCHIET 42 IP (Ptn 46 of RE)- T0IP00000000004200046 TWEE BUFFELS GESCHIET 42 IP (Ptn 12)- T0IP00000000004200012 TWEE BUFFELS GESCHIET 42 IP(Ptn 13)- T0IP00000000004200013 TWEE BUFFELS GESCHIET 42 IP (Ptn 20 of 4)- T0IP00000000004200020 TWEE BUFFELS GESCHIET 42 IP (Ptn 42 of Ptn 27)- T0IP00000000004200042 TWEE BUFFELS GESCHIET 42 IP (Ptn 55)- T0IP00000000004200055 TWEE BUFFELS GESCHIET 42 IP (Ptn 56)- T0IP00000000004200056 TWEE BUFFELS GESCHIET 42 IP(Ptn 19 of 6)- T0IP00000000004200019 TWEE BUFFELS GESCHIET 42 IP(Ptn 37 of Ptn 31)- T0IP0000000000420003 TWEE BUFFELS GESCHIET 42 IP(Ptn 39 of Ptn 8)- T0IP00000000004200039 TWEE BUFFELS GESCHIET 42 IP(Ptn 41 of 8)- T0IP00000000004200041 TWEE BUFFELS GESCHIET 42 IP (Ptn 43 of Ptn 9)- T0IP00000000004200043 TWEE BUFFELS GESCHIET 42 IP (Ptn 47 of 6)-

	T0IP00000000004200047 TWEE BUFFELS GESCHIET 42 IP (Ptn 52 of RE)- T0IP00000000004200052 TWEE BUFFELS GESCHIET 42 IP (Ptn 53 of Ptn 52)- T0IP00000000004200053 TWEE BUFFELS GESCHIET 42 IP(Ptn 6 RE)- T0IP00000000004200006 BOSHOFFS RUST 258 IP (Ptn 6 of Ptn 1)-T0IP00000000025800006 BOSHOFFS RUST 258 IP (Ptn 13 of Ptn 5)- T0IP00000000025800013 BOSHOFFS RUST 258 IP (Ptn 5 of Ptn 1)-T0IP00000000025800005 RHENOSTERPUT 257 IP (Ptn 1 of RE)-T0IP00000000025700001

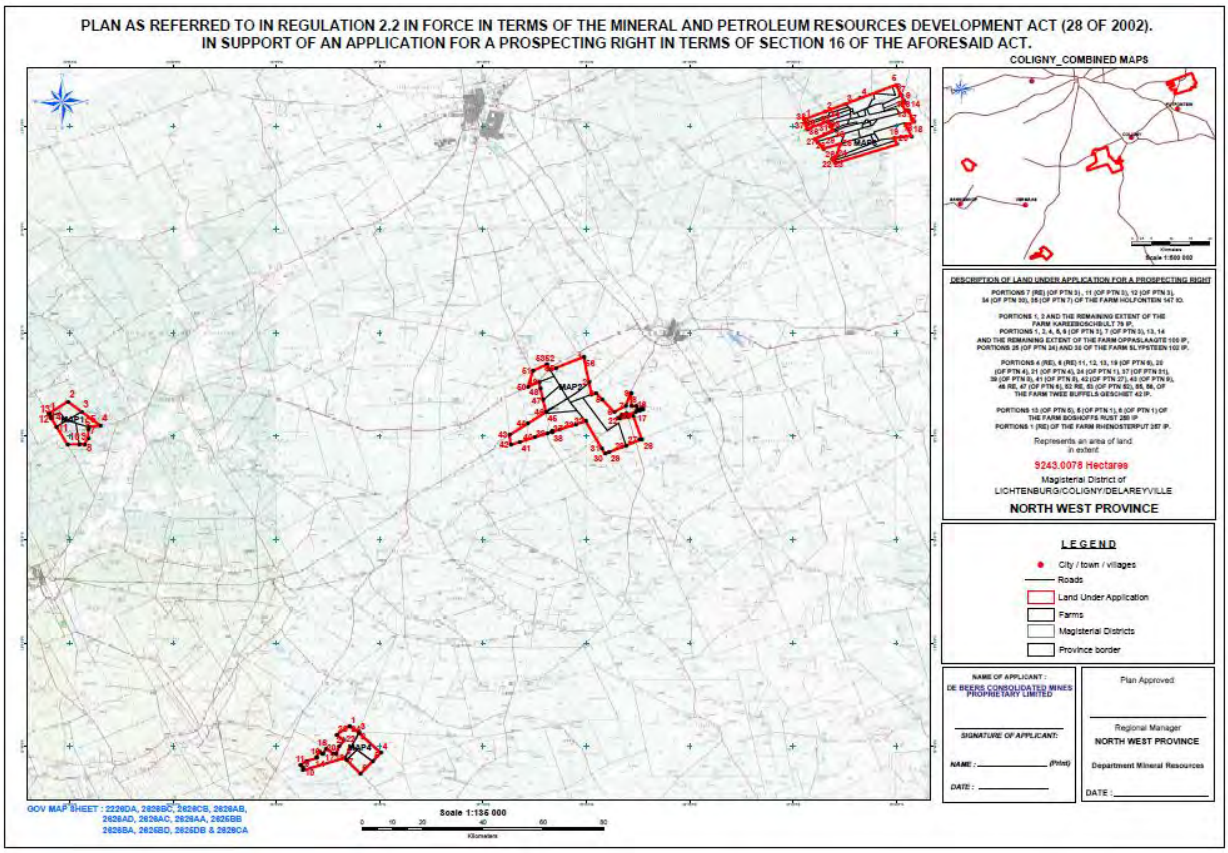
c) Locality map

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



d) Description of the scope of the proposed overall activity.

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



Prospecting for kimberlite is a dynamic and result-driven operation which proceeds in phases, the outcome of which cannot be predicted or predetermined. The programme could be stopped at any stage during the prospecting operation if the results are negative or non-economical. Prospecting activities to be undertaken include non-invasive (i.e. desktop studies and ground geophysical surveys) and invasive (i.e. drilling) techniques.

The environmental footprint for drilling is limited to less than 0.64 Ha per site, four (4) drill sites are anticipated to be carried forward to drilling. During site setup shrubs and grass will be cleared to make space for the rig. It must be noted that no roots of both grass and shrubs are reduced to minimise erosion. Consequently the site will rapidly recover following completion of exploration activities.

Water is only required when drilling activities commence. Drilling water requirements fall within the “small industrial user” where the use of water is less than twenty cubic metres per day for prospecting. The water that will be used for the prospecting activities will be sourced on agreement from an existing authorized water user which could be either the land owner or local municipality. The department responsible for water resources shall be consulted with regards to any water related agreement with either the land owner or local municipality prior to drilling. No water will be abstracted in terms of section 21(a) of National Water Act, 1998

(Act no. 36 of 1998). Drilling may take a few days to two months to complete per site depending on the geology of the area, technical challenges and other factors.

(i) Listed and specified activities

NAME OF ACTIVITY (**E.g. For prospecting** - *drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc….etc…etc* **E.g. For mining** - *excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)*	**Aerial extent of the Activity Ha or m^2**	**LISTED ACTIVITY Mark with an X where applicable or affected**	**APPLICABLE LISTING NOTICE (GNR 983, GNR 984 or GNR 985)**
Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)	9243.0078ha	X	GN983, Activity 20
Desktop studies, Further feasibility study investigations and mineral resource estimation	9243.0078ha	-	Not listed
Drilling Programme - incl. Core drilling and Large diameter drilling	0.64 Ha/site	X	GN983, Activity 20
Water required for drilling *	n/a	-	Not listed
Sanitation requirements (Chemical toilets)	n/a	-	Not listed
Geological mapping and Geophysical surveying	200 Ha/site	-	Not listed

(ii) Description of the activities to be undertaken

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

Overview

De Beers Consolidated Mines Proprietary Limited (De Beers) has lodged an application for a prospecting right over the properties described above. De Beers proposes to conduct prospecting activities in terms of listing 20 Regulation No. 983 of the Environmental Impact Regulation Listing Notice 1 of 2014.

If this environmental authorisation is successfully granted the following activities will be undertaken in a phased approach, whereby the results of each phase determines whether the subsequent phases will be undertaken:

Desktop Studies
This involves the compilation of all available geological and related information, relevant to prospecting for diamonds hosted in kimberlites, available from both public and commercial sources, for the property. This information is then assessed by the geologist and other specialists (such as a geophysicist) as required, in order to determine the best prospecting techniques to be used in order to discover and subsequently test any kimberlites on the property. Note that this activity is repeated at the end of each phase of prospecting, by the interpretation and integration of new prospecting information with the existing information set, in order to inform a decision on whether further work is warranted and if so, the specific scope of this additional work.

Ground Geophysical Surveys
Ground geophysical surveys involve the systematic measurement of magnetic, gravitational and electromagnetic fields over target areas of interest within the property, using appropriate instruments. The individual survey areas vary between 500 x 500 m to 2 x 2 km depending on the inferred size of any target. Magnetic survey lines are spaced at a maximum of 50 m apart and readings will be taken at a minimum of 5 m intervals along the lines. Electromagnetic and gravity survey lines are spaced at a maximum of 100 m apart with readings taken at a maximum of 50 m along the lines. After data collection has been completed, data processing and visualization is carried out to allow the interpretation of the survey.

Drilling
Core drilling will be carried out on geophysical anomalies to test for the presence of kimberlite. If kimberlite is discovered, the primary objective for core drilling is for geological logging. The exploration drilling holes may be vertical or inclined, usually at a maximum angle of 60 degrees (from the horizontal). The borehole depth will be determined by the geologist and will depend on the type of anomaly and the geological conditions, including overburden (the thickness of material that overlies the target kimberlite). The maximum depth of such holes is typically 400 meters where the cover is thin, and 600 meters where the cover is thick, and 8 boreholes are anticipated to be drilled per target.

The size of core drilled will be determined by such factors as cost, proposed core sampling, the degree of logging required and proposed geotechnical investigations. Sizes commonly used are HQ (63.5 mm diameter core) and NQ (47.6 mm diameter core) or variations on these. The orientation and depth of core holes will vary depending on the drilling objective. In the case of delineation drilling, angled core holes will be drilled to establish accurate kimberlite / country rock boundaries at depth (in other words, where the edge of the kimberlite is at depth). Vertical holes will be drilled for geological modelling and / or sampling of the core.

Core holes are also used as pilot holes for large diameter holes. The geological information provided by the core holes greatly reduces the risk of selecting inappropriate Reverse Circulation Large Diameter Drilling (RC LDD) hole locations. Core holes allow for maximum control on information such as overburden thickness, density, country rock dilution and likely kimberlite intersections, and therefore allow more accurate determinations of the position of likely RC LDD holes for diamond recoveries.

Material derived from i.e. core will be examined on site for logging purposes and sampled for a variety of analyses as described below. RC LDD currently up to 610 mm diameter provides good geological and especially grade data. RC LDD will be conducted when grade assessment is one of the primary objectives of the exercise. The sizes of the boreholes drilled will be determined by such factors as proposed sampling, availability of drilling equipment, cost and the volume of sample required. RC LDD will take place after pilot core drilling. The pilot hole will also be used as a guide for geological control and sample planning.

e) Policy and Legislative Context

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT *(a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and are to be considered in the assessment process)*	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTECT.** *(e.g. In terms of the National Water Act & Water Use License has / has not been applied for)*
Legislation		
Constitution of South Africa, specifically everyone has a right; a. to an environment that is not harmful to their health or wellbeing; and b. to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that: i. prevent pollution and ecological degradation; ii. promote conservation; and iii. Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.	Prospecting activities	The prospecting activities shall be conducted in such a manner that significant environmental impacts are avoided, where significant impacts cannot all together avoided be minimised and mitigated in order to protect the environmental right of South Africans.
Minerals and Petroleum Development Resources Act, Act 28 of 2002 (MPRDA) section 16 (as amended)	Prospecting activities	The conditions and requirements attached to the granting of the prospecting right will apply to the prospecting activities.
National Environmental Management Act, No 107 of 1998 (as amended) (NEMA) Listing Activity 20 of Listing Notice 1 in terms of Regulation 983 of 2014	Prospecting activities	The appropriate environmental authorisation will be obtained before proceeding with any prospecting activities. Measures will be implemented to prevent any pollution occurring during the drilling activities. The disturbed area shall be

		rehabilitated in such a way that is stable, non-polluting, non-eroded, free from alien invasive species and suitable for agreed post closure land use.
National Water Act, Act 36 of 1998 (NWA):	N/A	**No water use license is required for this application**. Any water required for drilling activities will be obtained from a legal source within the area or brought in via a mobile water tanker.
National Environmental Management: Waste Act, Act 59 of 2008 (NEMWA)NEM: WA (as amended)	Management measures environmental awareness plan	The generation of potential waste will be minimised through ensuring employees of the drilling contractor are subjected to the appropriate environmental awareness campaign before commencement of drilling. All waste generated during the drilling activities will be disposed of in a responsible legal manner. Proof of legal disposal will be maintained on site.
National Heritage Resources Act, 25 of 1999 ("NHRA")	Management measures	Phase 1 Heritage Impact Assessment shall be conducted prior to drilling to ensure that significant impacts on heritage artefacts, heritage site and graves. No drilling activities will take place with 50m of any identified heritage resource such as a grave.
Municipal Plans and Policies		
District Municipality		
Ngaka Modiri Molema District Municipality IDP 2012/2016		Used to identify relevant socio-economic background information as well as spatial development information
Tswaing Local Municipality, 2012/2017		Used to identify relevant socio-economic background information as well as spatial development information
Ditsobotla Local Municipality, 2012/2017		Used to identify relevant socio-economic background information as well as spatial development information
Standards, Guidance and Spatial Tools		
BGIS (www.bgis.sanbi.org)	Baseline environmental	Used during desktop research to identify sensitive environments within the

	description	prospecting rights area.
SANS 10103:2008 The Measurement and Rating of Environmental Noise with Respect to Land Use, Health, Annoyance and to Speech Communication	Management / monitoring measures	Used to set the standard allowable for noise generation and control during drilling.
SANS 1929:2005 Edition 1.1 – Ambient Air Quality Limits for Common Pollutants	Management / monitoring measures	Standard for dust fallout. The activity in question for this application is driving on gravel roads.

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).

The aim of the prospecting work programme is to locate and evaluate diamond deposits hosted in, or locally derived from kimberlite, which as an igneous rock can in theory be found within any other older host rocks. As the peak ages of kimberlite in the region are Phanerozoic age, roughly 1100 Ma, any rocks older than these dates can host kimberlites. In addition it has been well established that diamonds are most commonly present in economic concentrations in kimberlites found within cratonic regions and related tectonic blocks.

The area applied for falls within the Kaapvaal Craton and thus has the generic potential to host diamondiferous kimberlites.

Numerous kimberlites, including the diamond alluvial fields, are thus found in quite close proximity to the area applied for. Premier mine is located approximately 280km to the north east and even closer are the Swartruggens kimberlite dykes. Kimberlites are known to occur in clusters, and hence the reason for applying for this prospecting right as it occurs in close proximity to known diamond mines, e.g. Lace Mine and Premier Mine.

Prospecting activities are therefore needed to:

1. Confirm and obtain additional information concerning potential targets through non-invasive activities (desktop studies and ground geophysical surveys) and invasive (drilling) activities.
2. Assess if the resource can be extracted through future mining in an environmentally socially and economically viable manner.

Should prospecting activities prove that there are feasible minerals to allow for mining, a new mine may be developed which would generate extensive employment opportunities in an area where employment is needed.

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

Kimberlites are known to occur in clusters, and hence the reason for applying for this prospecting right as it occurs in close proximity to known diamond mines, e.g. Lace Mine and Premier Mine.

Geophysical methods and follow-up drilling have been proven very useful in detecting potential kimberlite targets and they will therefore be used to identify optimal locations of potential bodies of economic interest within the prospecting area.

h) Full description of the process followed to reach the proposed 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 4 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;
(b) the type of activity to be undertaken;
(c) the design or layout of the activity;
(d) the technology to be used in the activity;
(e) the operational aspects of the activity;
(f) *the option of not implementing the activity*.

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

Until such time that the non-invasive activities have been completed the exact location of the drill sites cannot be confirmed. However the following restrictions will be applied to the final site selection:

- No drill site will be positioned within 500m of a structure.
- No drill site will be positioned within 100m of a water course.
- Where possible existing access roads will be utilised to access the drill sites.

(b) the type of activity to be undertaken;

The technologies that will be used to undertake the prospecting activities are based on the refinement of techniques employed previously by the company to explore and discover kimberlites. The prospecting activities proposed in the Prospecting Work Programme (PWP) follow a phased approach, whereby the preceding phase determines if further work is warranted and as a result no alternatives are available to complete the proposed prospecting activities.

(c) the design or layout of the activity;

Alternative site layout is considered to ensure that resting place and ablution facilities are located away from the drilling activities to minimise the noise impacts. Site establishment is done with closure in mind to ensure that only the required size is disturbed. No camp site will be erected on site, as existing establishments will be used for accommodation in the nearby town(s).

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

The method and techniques employed for the investigation of potential targets and deposits are suitable for the proposed prospecting activities.

(e) the operational aspects of the activity;

Alternative time frames can be made to ensure that the impact on the day to day running of the inherent land use are minimised, example drilling on cultivated land can be rescheduled

post harvesting. Prospecting activities will be conducted during daylight hours to minimize exposure to the risks. If necessary certain drill sites can be timed to occur during school terms or holidays as may be required in certain instances by stakeholders. The time of implementing drilling activities during the course of the day may also be reconsidered in consultation with landowners. Ideally drilling activities will occur continuously until such time that a hole is completed. If necessary certain holes can be drilled for a 12 hour day, with no drilling occurring during the night.

(f) the option of not implementing the activity.

Drilling is required in order to investigate the potential and feasibility of a resource and also to generate a SAMREC compliant mineral resource statement. There is no potential for any future investment in a mine without the confirmation of the mineral resources which can only be obtained through drilling activities.

Should the prospecting right be refused, effectively a potential diamond resource will be sterilised.

The socio-economic benefit and most notably the future employment potential of a mine development will also be lost if the prospecting activities are not implemented in order to determine the feasibility of any diamondiferous deposit that may occur within the area.

ii) Details of the Public Participation Process Followed

Describe the process undertaken to consult interested and affected parties including public meetings and one on one consultation. NB the affected parties must be specifically consulted regardless of whether or not they attended public meetings. (Information to be provided to affected parties must include sufficient detail of the intended operation to enable them to assess what impact the activities will have on them or on the use of their land.

The following steps will be undertaken as part of the public participation process in order to notify interested and affected parties:

a. Potential I&APs will be identified through the use of an existing I&AP databases. The existing databases include landowners, neighbouring landowners, community members and non-governmental organisations (NGOs) who have participated in previous EIA processes in the area.
b. Potential I&APs will be notified about the project by means of:
i. Letters of notification to directly affected landowners;
ii. Media advertisements and site notices; and
iii. Written notifications to other stakeholders including Local and District Municipalities (including traditional authorities where applicable).
c. Newspaper advertisements will be placed in the relevant regional and/or local newspapers to inform stakeholders of commencement of the Basic Assessment (BA) process and invite the registration as stakeholders.
d. I&APs will have the opportunity to review and comment on the Draft Basic Assessment Report. Focus group meetings may be held with the key stakeholders in the local area
e. I&APs will be notified of the environmental authorisation, and if required the appeal process to be followed.

iii) Summary of issues raised by I&APs

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

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

Municipal Councillor	X				
Municipality	X				
	X				
Organs of state (Responsible for infrastructure that may be affected Roads Department, **Eskom. Telkom, DWA.**					
Communities					
Dept. Environmental Affairs					
Department of Rural, Environmental and Agricultural Development					

Other Competent Authorities affected					
OTHER AFFECTED PARTIES					

iv) The Environmental attributes associated with the alternatives *(The environmental attributed described must include socio-economic, social, heritage, cultural, geographical, physical and biological aspects)*

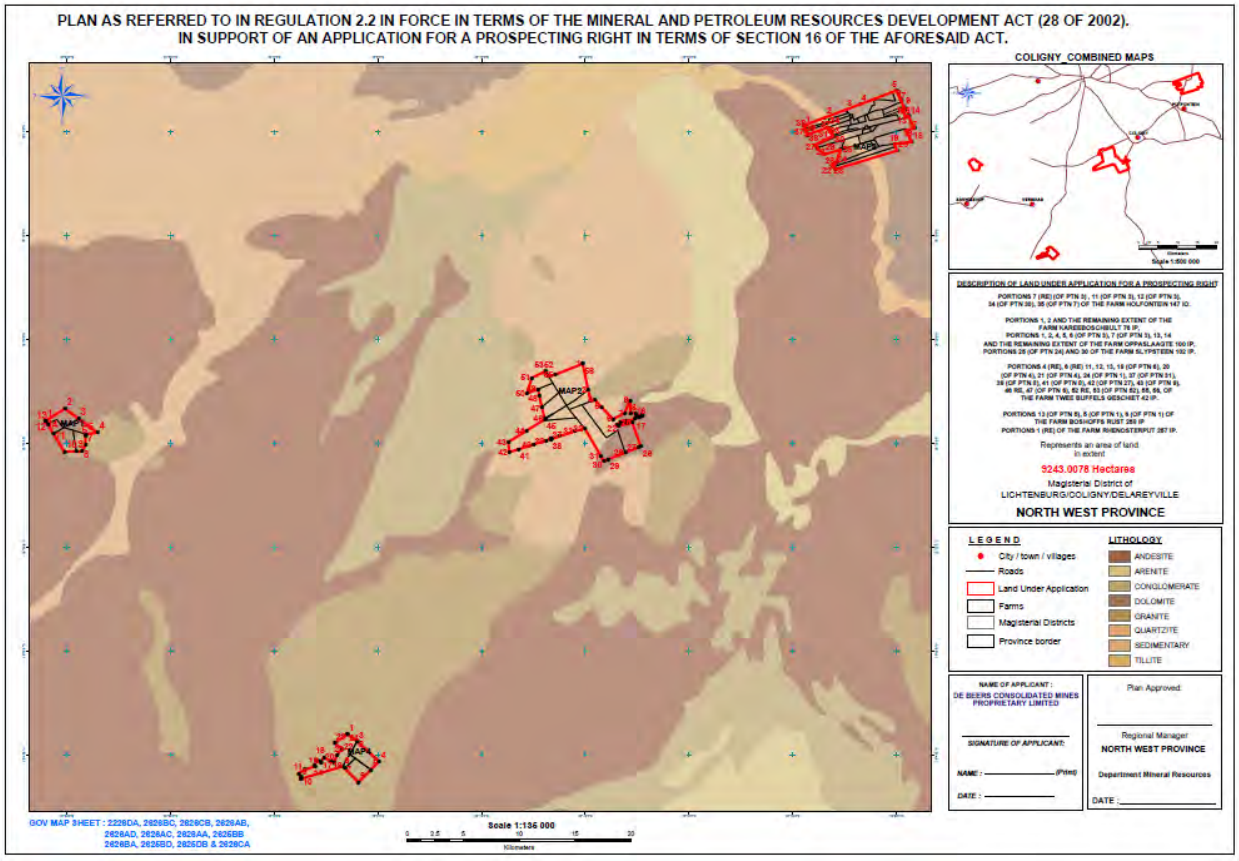
(1) Baseline Environment

(a) Type of environmental affected by the proposed activity.

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

Geology

The specific area applied for is within the Transvaal Supergroup Basin and is characterized by interbedded shales, arenites, dolomites conglomerates and (basaltic andesite) lavas of the Pretoria Group. Kalahari sands and metamorphosed rocks comprising of gneisses, metaquartzite and metapelites were also mapped. Some Karoo Supergroup shales, tillites and mudstones (Dwyka) occurs in the northern side of the area.

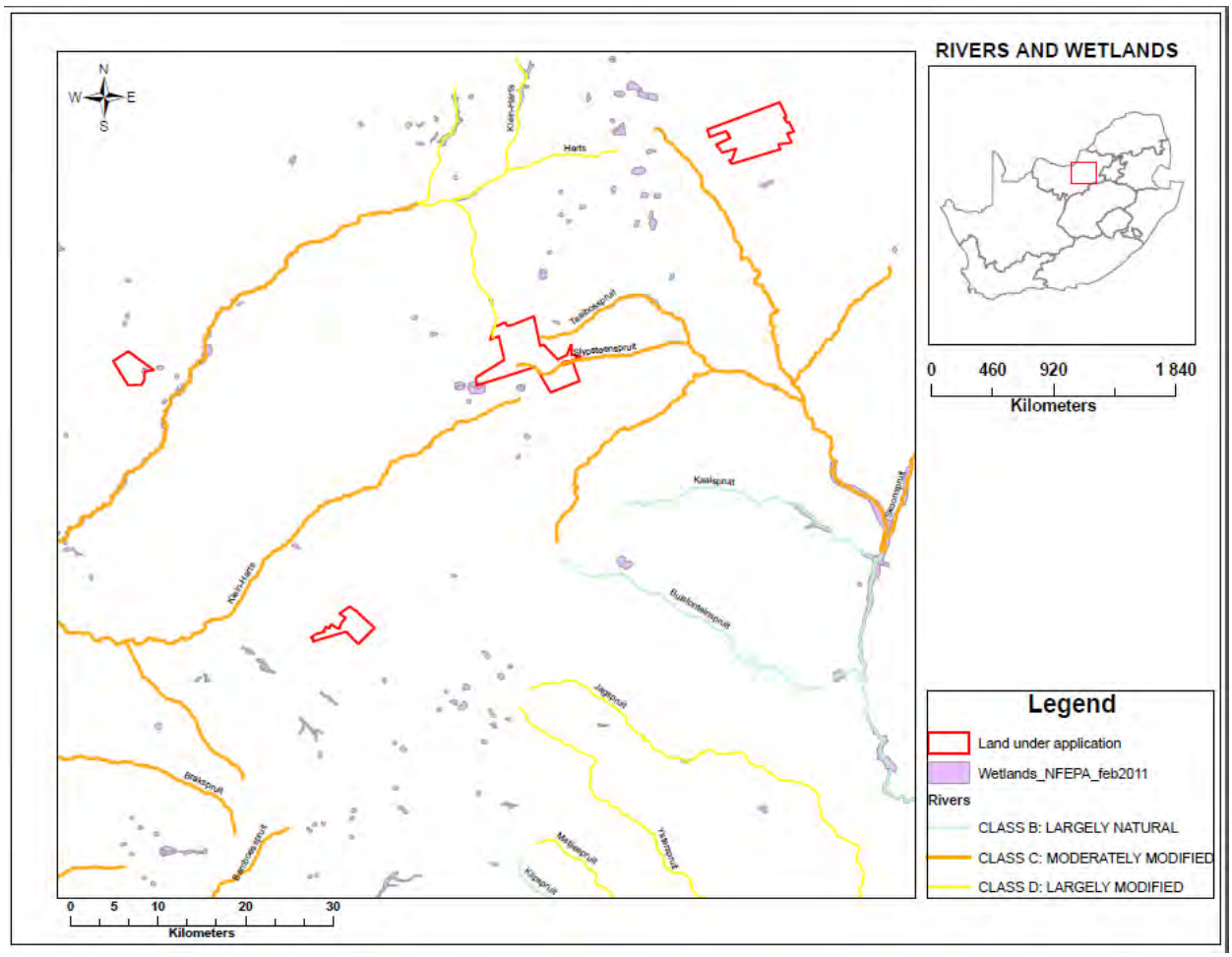


(The above plan is attached in larger format under **Appendix D**).

Topography
The proposed prospecting application area is predominantly flat with some mountainous areas in the northern parts of Distsobetla municipality.

Climate
Climatic conditions in the study area comprise of temperature range from 17°C to 31°C in summer and from 3°C to 21°C in winter. The annual total rainfall is about 360mm, which almost fall during the summer months between October and April.

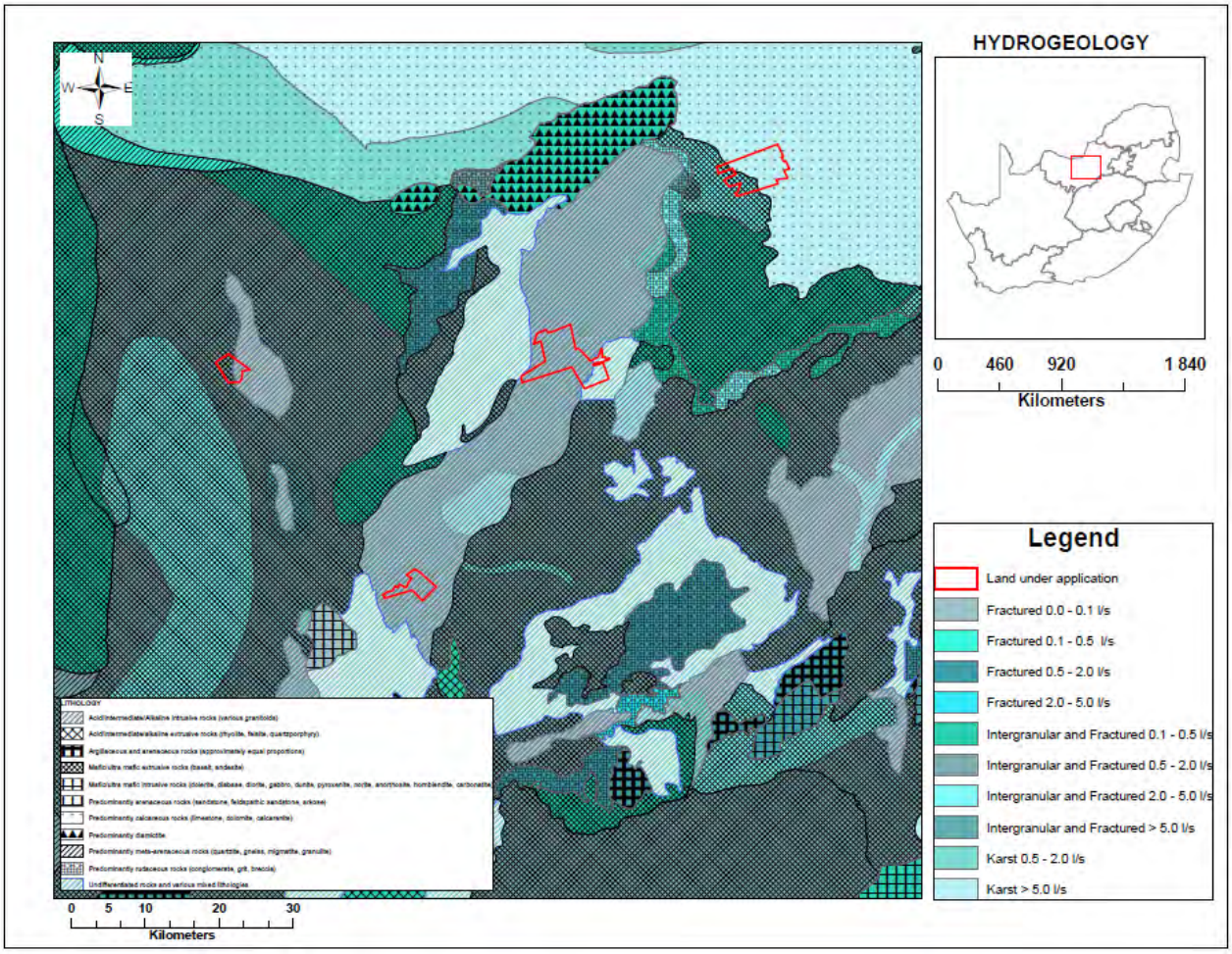
Water Resources
The proposed prospecting license areas fall within the Hart Water Management Area (WMA) and within Quaternary Catchment Area C31A, C31B, C31C and C24F. The Slypsteenspruit and Taaibosspruit rivers which are moderately modified and class C flows through the area applied for and feed into Skoonspruit River which is located approximately 38km sw. The Harts River is located approximately 4m SW of the proposed loop 1 and it is class C moderately modified. Some natural wetlands exist in the area and within close proximity of the proposed prospecting area.



The area under application is underlain by karst, fractured and intergranular groundwater occurrences. The Karst is predominantly calcareous rocks (limestone, dolomite and calcarenite) with >5.0l/s yield. The fractured and intergranular groundwater occurrences is characterised by

mafic or ultramafic extrusive rocks (basalt and Andesite) and acid/intermediate/alkaline intrusive rock with yield between 0.5 to 2.0l/s.

These aquifer descriptions are illustrated in the below figure.



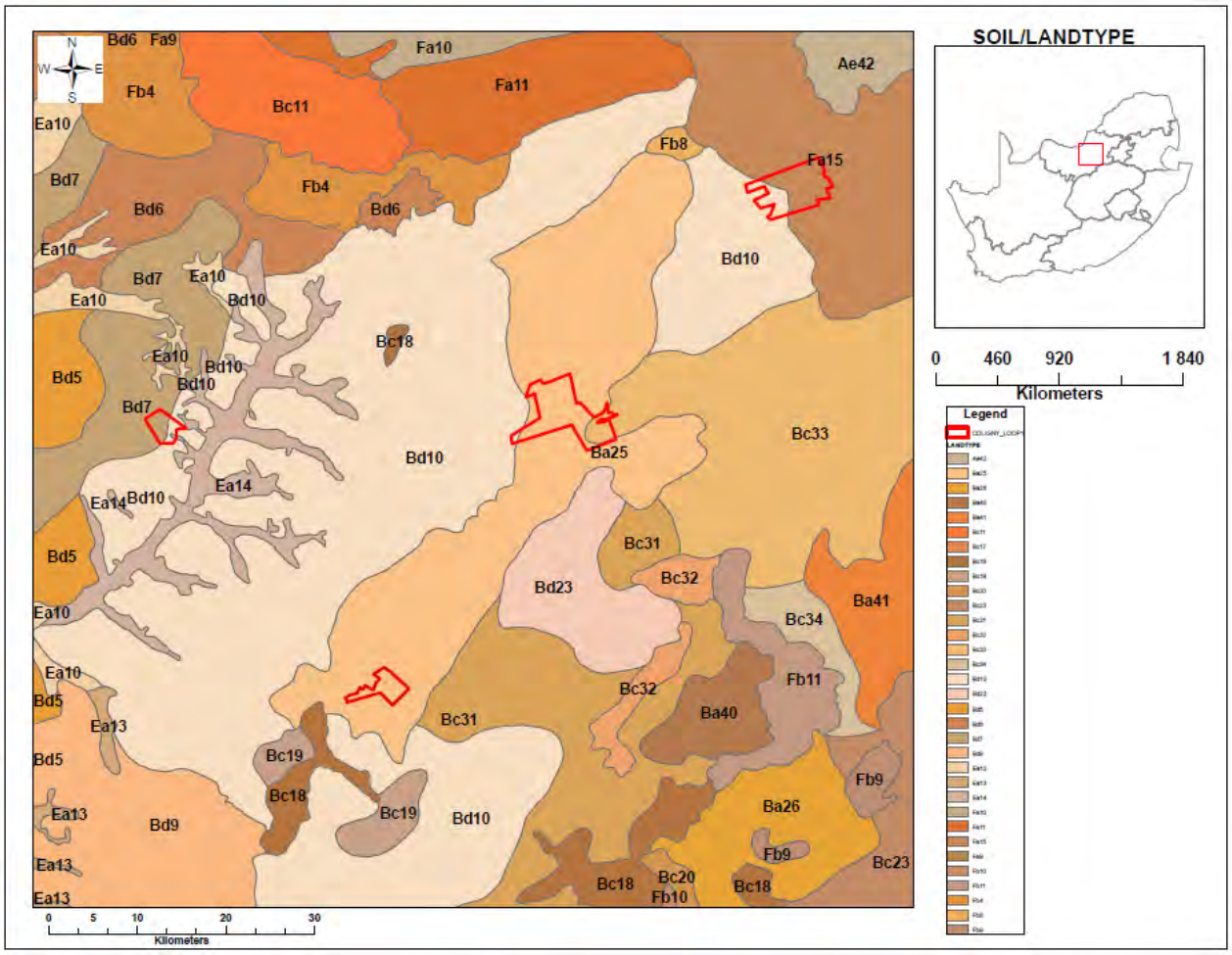
Soil and land capability

The landtype memoirs and associated maps indicate that the proposed prospecting application area lies within the Ba25, Bd10, Bc33, Bd7 and Fa15.

The landtype for units Ba25, Bd7, Bd10 and Bc33 refers to red Plinthic catena which is not widespread, upland duplex and margalitic rare soils. The unit Ba25 is predominantly formed by basement complex granite with sporadically occurring Ventersdorp lava and sedimentary rocks, with unit Bd10 being the opposite. The land type unit Bc33 is predominantly formed by Ventersdorp lava, with Ventersdrop quartzite, grit and tuff occurring in certain places. The Bd7 unit has been formed by Ventersdrop lava which is sometimes overlain by calcrete and Basement Complex granite occurring in certain places. Small pans occupy 5% of the land type.

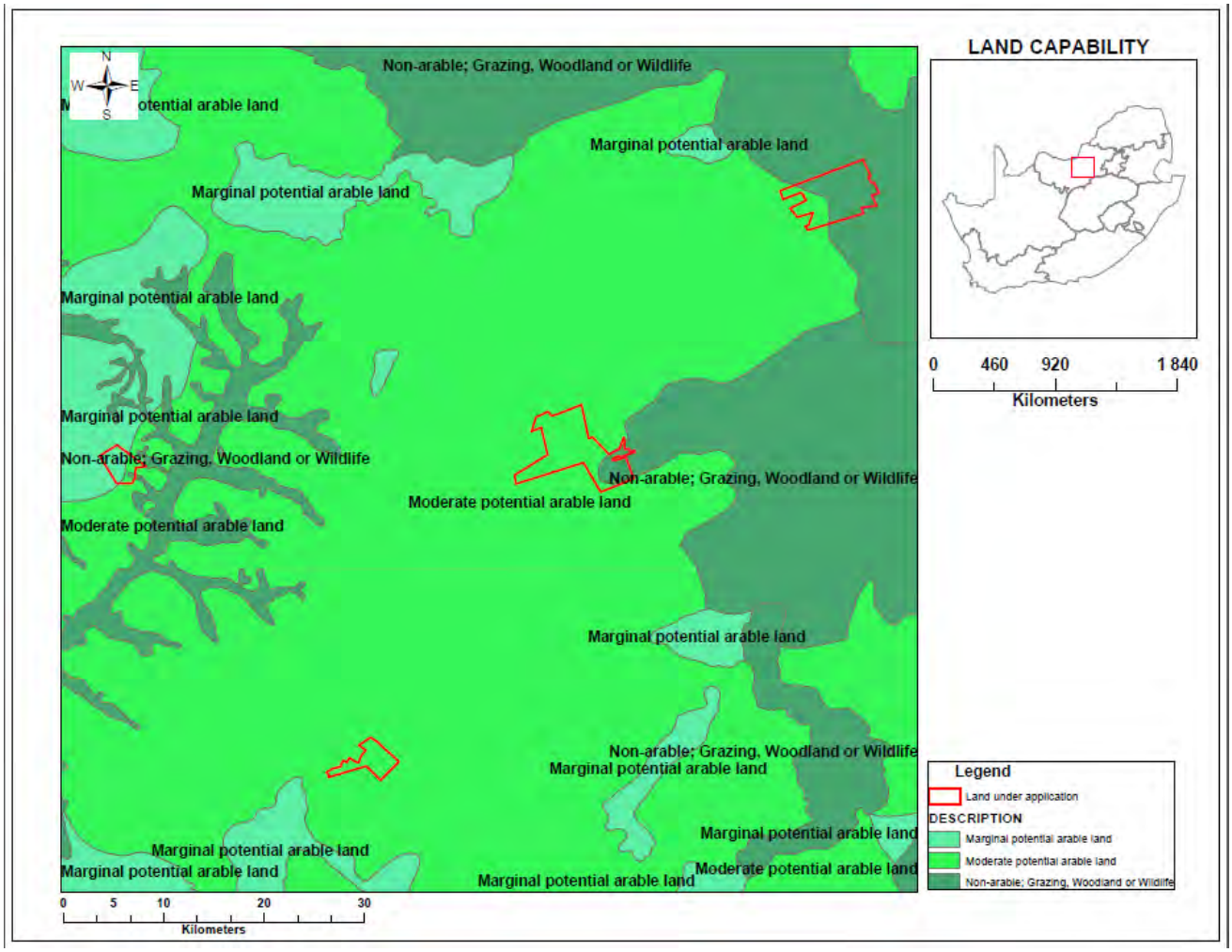
Units Fa15 landtype refer to glenrosa and/or mispah forms (other soils may occur), lime rare or absent in the entire landscape and the soils are formed by the dolomite and chert of the Chuniespoort group. The chert gravels are abundant on midslopes and footslopes including valley bottoms

The relative distribution of the different landtypes occurring in the area is shown in the figure below.



The land under prospecting is characterised by varies from moderately potential arable, marginal potential arable to non-arable land which is suitable for grazing, woodland or wildlife. The moderately land has soils that have severe limitation that reduces the choice of plants and require special conservation practices or both while the marginal potential arable land has restricted choice. The npn-arable land have little to no hazard of erosion but have other limitations which include their impractical to remove and thus limit their use mainly to pasture, rangeland, forestland or wildlife habitat.

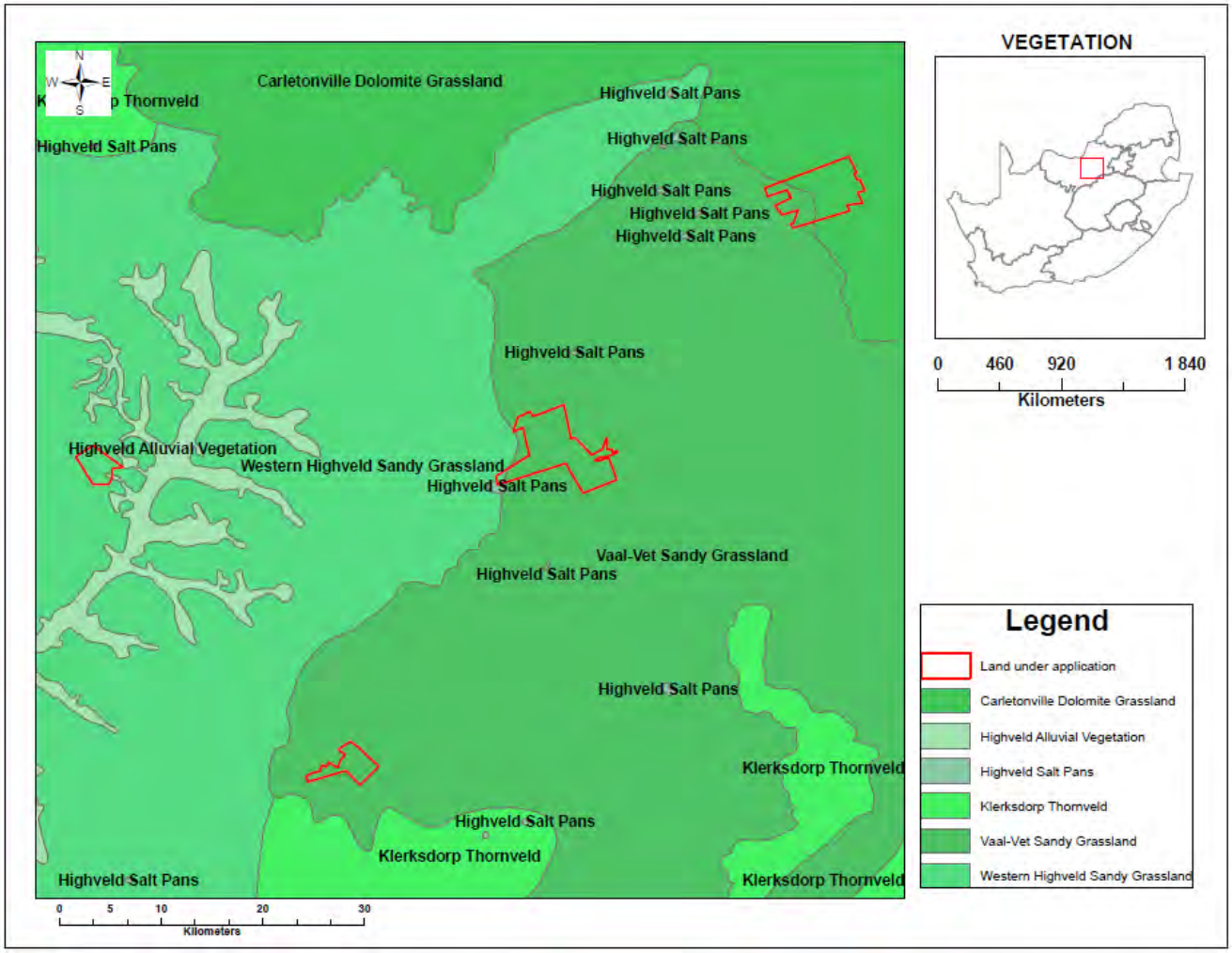
The Land Capability map is provided below.



Biodiversity

The proposed prospecting right application area falls within Grassland and Savanna Biome including Azonal Vegetation. The area is dominated by Carltonville Dolomite, Vaal-vet Sandy and Western Highveld Grassland including the Highveld Salt plans belonging to the Azonal vegetation. While all have conservation target of 24%, the Carletonville Dolomite Grassland is classified as vulnerable, while the Highveld Salt pans being least threatened with both Vaal-vet sand and Western Highveld Sandy Grassland being endangered. The land use type is mainly grazing and wildlife while some limited cultivation takes place in the area.

These vegetation types are shown below.



The Birds species that are known to naturally occur in the North West region as a whole are summarized in table below. This however does not imply that all of these species will occur at any given place in the region as a whole (source: Duncan Butchart, 2001, Wildlife of the Lowveld, common animals and plants).

Species category	English name	Scientific name	Reporting rate (%)
Endangered	Saddlebilled Stork	Ephippiorhynchus senegalensis	2-8.2
Vulnerable	Pinkbacked Pelican	Pelecanus rufescens	< 2
	Whitebacked Night Heron	Gorsachius ieuconotus	< 2
	Cape Vulture	Gyps coprotheres	8-20
	African Whitebacked Vulture	Gyps africanus	2-33
	Lappetfaced Vulture	Torgos tracheliotos	2-28
	Tawny Eagle	Aquila rapax	2-13
	Martial Eagle	Polemaetus bellicosus	7-17
	Bateleur	Terathopius ecaudatus	2-40
	African Marsh Harrier	Circus ranivorus	2-5
	Lesser Kestrel	Falco naumanni	> 17
	Blue Crane	Anthropoides paradiseus	7-22
	Grey Crowned Crane	Balearica regulorum	2
	African Finfoot	Podica senegalensis	2-4
	Kori Bustard	Ardeotis kori	14-28
	Whitebellied Korhaan	Eupodotis cafra	5-11
	Grass Owl	Tyto capensis	> 6

Socio-economic

The proposed prospecting license area is located in Mafikeng which falls within Tswaing and Ditsobotla Local Municipalities which forms part of the Ngaka Modiri Molema District Municipality. The Tswaing Local Municipality (TLM) is approximately 5 966km², while Ditsobotla Local Municipality (DLM) is 6 465km². The population of TLM is 130 478 with 30 582 household and the population of DLM is 168 902 with 44 500 household. The average household sizes 4 are persons for both municipalities. The population is distributed at an average density of 21 and 26 persons per km^2 for TLM and DLM respectively, which reflect that a very low population density for both municipalities and is a characteristics of rural area.

Tswaing Local Municipality						
Age	Gender					
Breakdo	Male	%	Female	%	Total	Percentage
0 to 4	8481	13.0	7959	12.2	16440	12.6
5 to 19	22964	35.1	21137	32.5	44102	33.8
20 to 29	10438	16.0	10699	16.4	21137	16.2
30 to 49	13309	20.4	13700	21.0	27009	20.7
50 to 64	6785	10.4	7046	10.8	13831	10.6
Over 65	3392	5.2	4567	7.0	7959	6.1
Total	**65369**	**100.0**	**65109**	**100.0**	**130478**	**130478.0**
Ditsobotla Local Municipality						
Age	Gender					
Breakdo	Male	%	Female	%	Total	Percentage
0 to 4	10705	12.6	9905	11.8	20610	12.2
5 to 19	17671	20.8	16621	19.8	34292	20.3
20 to 29	23278	27.4	21826	26.0	45104	26.7
30 to 49	21070	24.8	19979	23.8	41048	24.3
50 to 64	8836	10.4	10241	12.2	19077	11.3
Over 65	3398	4.0	5372	6.4	8771	5.2
Total	**84958**	**100.0**	**83944**	**100.0**	**168902**	**100.0**

TLM consist of more males to females for the age group 0 to 19, while the rest of the population constitute of more females than males. While DLM consist of more males than females for age group 0 to 49 while the rest of the population constitute of more females than males. The population growth rate from 2001 to 2010 was 2.3 and 1.23% for TLM and DLM respectively. The population by race for TLM comprise of majority being Africans at 92%, with Asians being 7%, Coloured at 1% and whites being 0.07%, while for DLM majority are Africans at 89% followed by whites at 8%, coloured 2% and the rest being 1%.

Economic active population and economic sectors

The percentage of economically active persons are 47.5% for TLM and 51% for DLM, having being viewed from 20 to 64 years old. The unemployment rate is 28.7% with youth unemployment being 40.10% for TLM, while for DLM is 28.3% with youth unemployment being 37%.

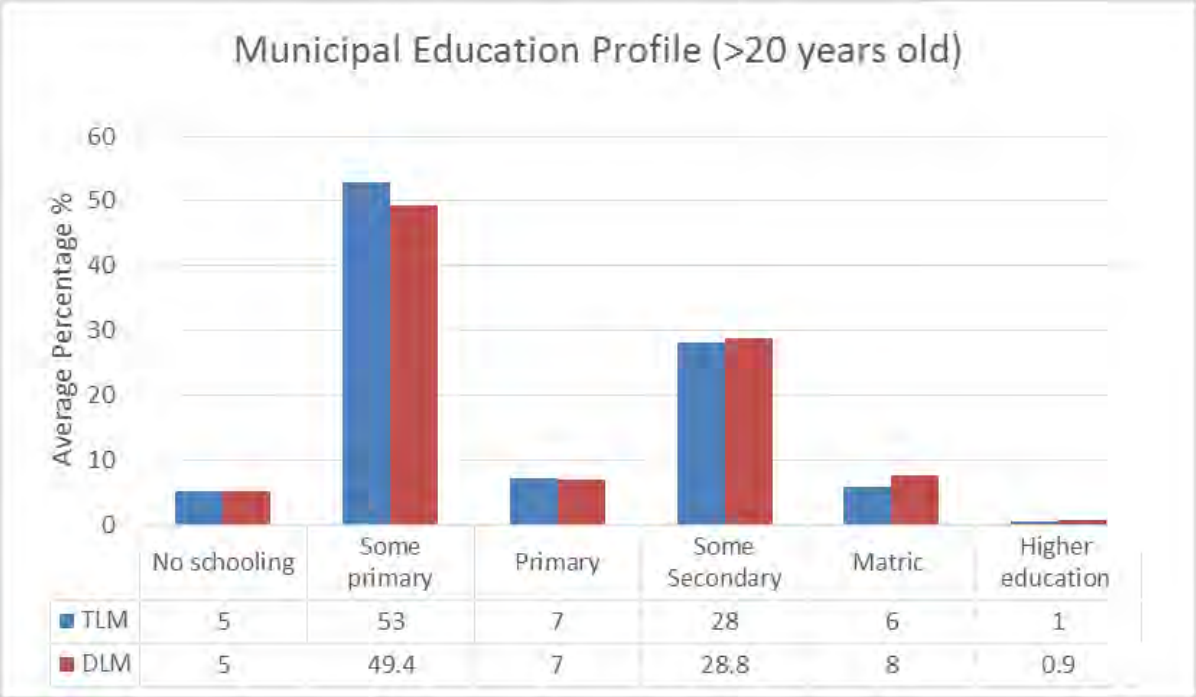
The economic activities per sector for TLM are dominated by Agriculture, community, and households with trade, transport, finance and construction to a limited. The RLM's economic cornerstone is agriculture consisting of livestock, poultry, vegetable and other crops.

In terms of income:

- Households without income are 13 and 12 % for TLM and DLM respectively. The majority of the households earn between R9 601 to R76 400 per annum at 60 and 59% for TLM and RLM respectably. Every low households earn above R76401 per annum for both municipality at 12 for TLM and 9% for DLM.

Education and literacy levels

All municipalities are characterised by large population who are considered illiterate or functionally illiterate as their education level range from no formal education to only primary school 58 and 55 for TLM and DLM respectively. This is followed by 28% and 29% for TLM and DLM respectably who has some secondary school. Only 1% of the population in both municipality have higher education.



	No schooling	Some primary	Primary	Some Secondary	Matric	Higher education
TLM	5	53	7	28	6	1
DLM	5	49.4	7	28.8	8	0.9

HIV/AIDS

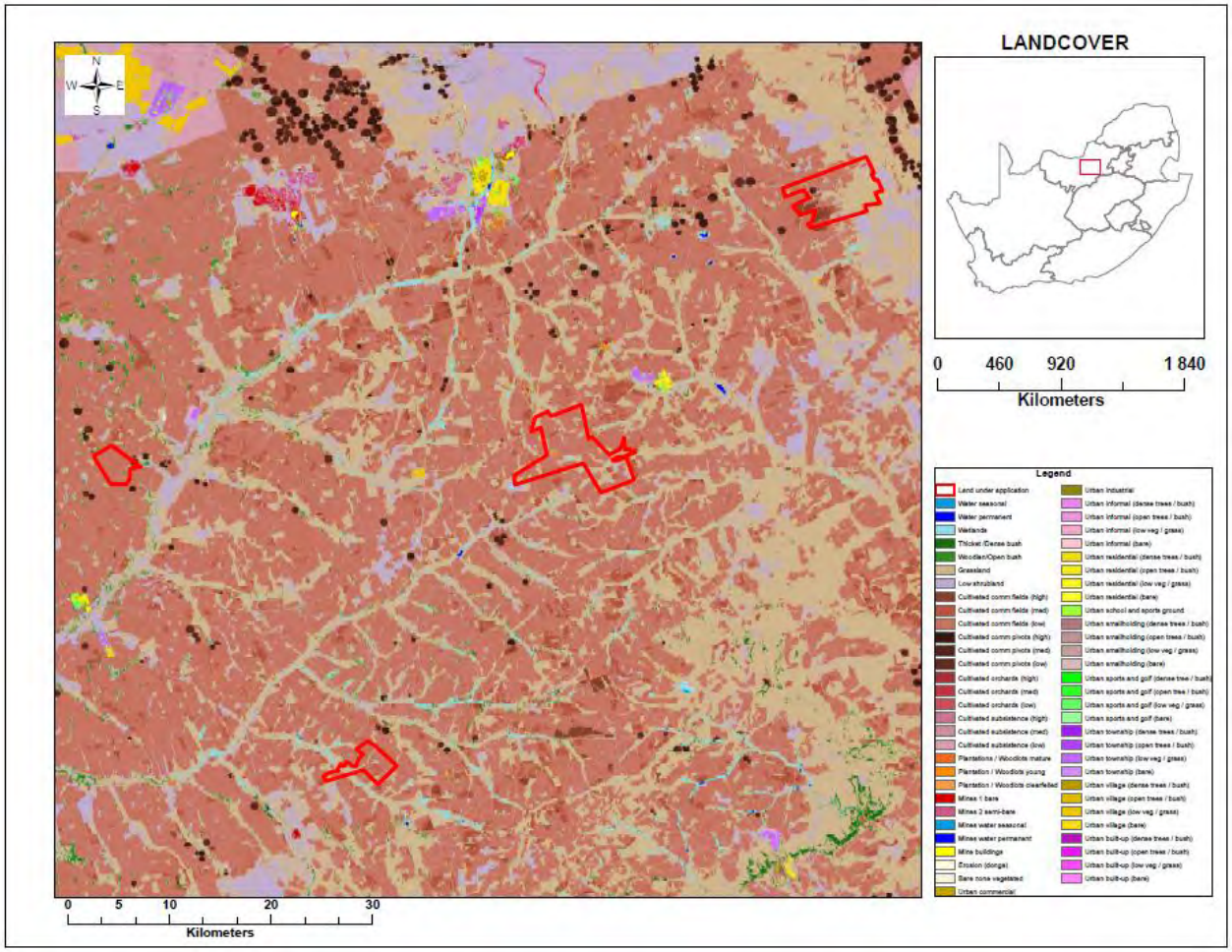
South Africa population is negatively affected by HIV/AIDS and poses some serious problems to the economic development. The municipalities' HIV prevalence is at 10.44% for TLM, while the HIV prevalence has not been reported for DLM, however considered important as the provincial level has significantly increased. The prevalence of HIV/AIDS in the district has an impact on the labour force and the problem is associated with mining activities and the associated socio-economic conditions.

Cultural Heritage

The heritage attributes of the municipalities is underlain by the Vaalian aged chert-rish dolomites of the Monte Christo Formation, Malmani Subgroup, Transvaal Sequence. The highly fossiliferous Caenozoic cave breccias are known to occur in dolomite layers which often contain more recent mammal and hominid.

(b) Description of the current land uses.

The land cover and uses associated with the proposed prospecting license area is shown in the map below. The proposed prospecting right area is dominated by livestock farming and wildlife including low cultivated land. The most part of the area is covered by grassland, low shrubs.

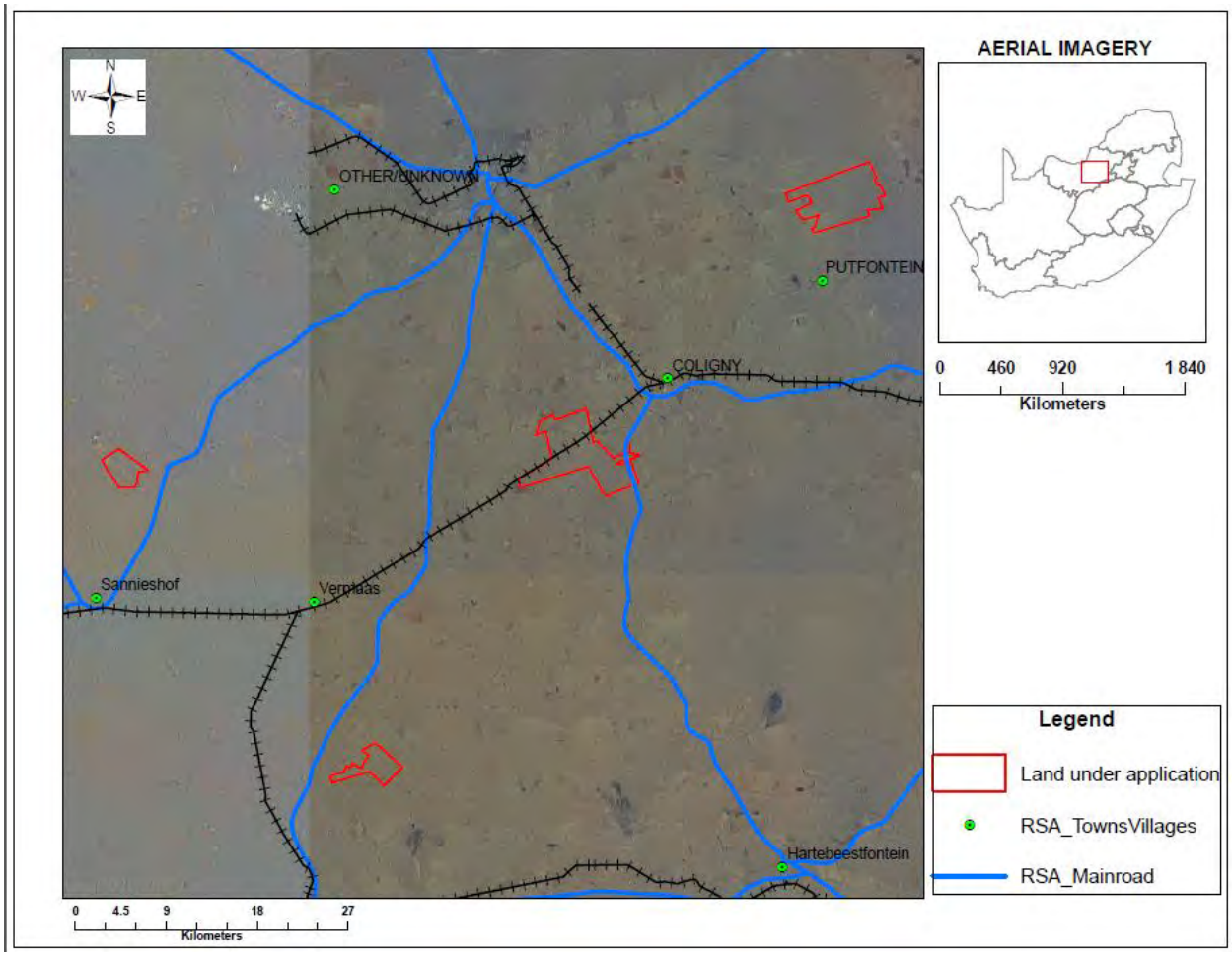


c) Description of specific environmental features and infrastructure on the site.

Slypsteenspruit and Taaibosspruit traverse the proposed prospecting rights applications, which are classified as class C moderately modified. Impacts on these rivers should be appropriately managed and remedied. Based on the outcomes of the initial prospecting phases (non-invasive activities), the location of any invasive activities such as drilling will be determined and the impacts on the identified water courses will subsequently be determined. The area also contains a number of trees and thicket stands, which should also be avoided as far as possible. It is expected that for the invasive activities (drilling), that only localised clearing of grass and shrubs are required in order to prepare a drill pad.

A number of farmstead dwellings, outbuildings and other farm infrastructure occur in the area and these will be avoided as far as possible. The area also has a number of roads that traverse the sites, from the R503 (national road) to various secondary roads as well as farm tracks. The invasive activities will seek to use existing roads in order to access properties where needed and it is not expected that any new access roads will be opened up. The map below gives an overview of the sites and the main towns and roads that traverse the site.

The map below gives an overview of the sites and the main towns and roads that traverse the site.



(d) Environmental and current land use map

(Show all environmental and current land use features)

Please refer to the Land Cover Map shown under section "(b) Description of the current land uses."

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

(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 potential environmental and social impacts include:

- ✓ Noise caused by the drilling rig travelling to and being established on each site, the diesel engine driving the drill, vehicles going to and from the drilling site;
- ✓ Visibility of the drilling rig;
- ✓ Dust generated by vehicles travelling over unpaved areas;
- ✓ Disturbance of soil from drill pad preparation and compaction;
- ✓ Disturbance of flora and fauna;
- ✓ Disturbance or damage to cultural and heritage resources such as graves or historic ruins;
- ✓ Potential contamination of soil, surface water and groundwater with hydrocarbons;
- ✓ Friction between local residents/landowners and prospecting personnel;
- ✓ If drilling is undertaken close to any residence, lodge, guest house or game farm, receptors may experience the noise, the visual appearance, the associated traffic and the presence of the drilling crew on the property as intrusive;
- ✓ It is not anticipated that the prospecting activities will have any lasting material effects on existing land uses on the prospecting areas or any other areas in their vicinity.

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 were determined in order to decide the extent to which the initial site layout needs revision).

Please refer to Impact Assessment Methodology described below.

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)*

The majority of the prospecting activities are non-invasive and hence will have limited environmental and social impact. The invasive activities will entail the drilling of approximately eight boreholes per drill site will have a minimal environmental and social impact as each drill site will be confined to an area of approximately 0.64 hectares.

Four (4) drill sites are anticipated with total footprint of 2.56 ha, which need to be viewed in the context of the entire prospecting license area under application which covers 9243.0078ha hectares.

All of the identified impacts will occur for a limited time and the extent of the impacts will be localised. All of the identified impacts can be suitably mitigated with the residual impact ratings being of ***low*** significance. After drilling activities have been completed and the drill pads rehabilitated to pre-drilling status, the impacts will cease to exist.

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).

Please refer to Impact Assessment Methodology described below.

ix) Motivation where no alternative sites were considered.

As discussed in previous sections, the proposed prospecting right area holds potential as because of the presence of known kimberlite occurrences in the area as well as the diamond mining activities. The proposed prospecting right application area is therefore regarded as the preferred site and alternative site have not been considered.

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

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

As discussed in previous sections, each of the prospecting phases is dependant in the results of the preceding phase. The location and layout of drill sites will be determined based on information derived from the desktop and geophysical surveys (non-invasive activities). Proposed drill sites will be selected so as to avoid known heritage sites, water courses, dwellings and infrastructure where practicable.

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.)

<u>Environmental Impact Assessment (EIA) Methodology:</u>

5x5 Risk Matrices

5x5 Risk Matrix is a systematic methodology that has been adopted to evaluate the risk of each respective impacts/unwanted event. The risk of each impacts/unwanted events is determined for Safety, health and Environment.

The fundamental principle of Risk Matrices is to recognise that it is simply a tool to prioritise risks and the actions required to manage the risk to an acceptable level. It is a risk ranking tool that provides a qualitative means to determine the significance of risks and the required effort to address priorities in addressing the risk.

A minimum of two factors are considered for each risk identified:

- **Likelihood**: chance/probability that the risk will occur within a time period
  The definition of likelihood provides time based frequency guideline for evaluating risks associated with (repeat) events on a 5 point scale.

- **Consequence**: The impact the risk will have, should it materialise
  Given the types of headline risks that the Family of Companies encounters, the consequences/ impact of these risks are categorised across the following areas:
  - Environmental
  - Legal
  - Social /community
  - Reputational

Note: The risk are categorised into low, medium, significance and high. Anglo American has adopted a ranking approach from 1 to 25, meaning there are unique Risk Numbers for each risk rated:
Low: 1 -5: Medium: 6 to 12: Significant: 12 to 20 and High: 21 to 25

Note: When rating significance of environmental aspects the duration and extent of impact must be taken into consideration as follows:

- For Pollution impacts – Toxicity, Volume and nature of the substance in question.
- For habitat disturbance – sensitivity of the habitat, the size of the area affected and the ability of the environment to rehabilitate (Assimilative capacity).
- For biodiversity impact – red data rating of the species and the range of the species.
- For resource use – amount of resource used, resource availability and whether it is renewable or not.

Impact				1 – Insignificant	2 - Minor	3 - Moderate	4- Significant	5 - High
Environmental				Lasting days or less; affecting small area (metres); receiving environmental highly altered with no sensitive habitats and no biodiversity value (e.g. urban/ industrial areas)	Lasting weeks; affecting limited area (hundreds of metres); receiving environment altered with little natural habitat and low diversity value	Lasting months; affected extended area (kilometres); receiving environment comprising largely natural habitat and moderate biodiversity value	Lasting years; affecting area on sub-basin scale; receiving environment classified as having sensitive natural habitat with high biodiversity value	Permanent impact; affecting area on a whole basin or regional scale; receiving environment classified as highly sensitive natural habitat with very high biodiversity value
Legal & Regulatory				Technical non compliance. No warning received; no regulatory reporting required	Breach of regulatory requirements. Report/ involvement of authority. Attracts administrative fine	Minor breach of law; report/ investigation by authority. Attracts compensation/ penalties/ enforcement action	Breach of the law, may attract criminal prosecution, penalties/ enforcement action. Individual licence temporary revoked.	Significant breach of the law. Individual or company law suits; permit to operate substantially modified or withdrawn
Social/ Communities				Minor disturbance of culture/ social structures	Some impacts on local population, mostly repairable. Single stakeholder complaint in reporting period	On going social issues. Isolated complaints from community/ members/ stakeholders	Significant social impacts. Organised community protests threatening continuity of operations	Major widespread social impacts. Community reaction affecting business continuity. "License to operate" under jeopardy
Reputation				Minor impact – public awareness may exist but no public concern	Limited impact – concern/ complaints from certain groups/ organizations (e.g. NGO's)	Local impact, public concern/ adverse publicity localised within neighboring communities	Suspected reputational damage; local/ regional public concern and reactions	Noticeable reputational damage – national/ international public attention and repercussions
				Risk Rating				
Likelihood/Probability	5 Almost Certain	99%	The unwanted event has occurred frequently; occurs in order of 1 or more x per year & is likely to reoccur within 1 year	11 (M)	16 (S)	20 (S)	23(H)	25 (H)
	4 Likely	60%	The unwanted event has occurred infrequently; occurs in order of less than 1 x per year & is likely to reoccur within 3 years	7 (M)	12 (M)	17 (S)	21(H)	24 (H)
	3 Possible	30%	The unwanted event has happened in the business at some time; or could happen within 10 years	4 (L)	8 (M)	13 (S)	18(S)	22(H)
	2 Unlikely	15%	The unwanted event has happened in the business at some time; or could happen in 30 years	2 (L)	5 (L)	9 (M)	14(S)	19(S)
	1 Rare	7.5%	The unwanted event has never been known to occur in the business; or it is highly unlikely that it will occur within 30 years	1 (L)	3 (L)	6 (M)	10(M)	15(S)

Environmental Impact Assessment (EIA):

As described earlier in this report, the prospecting activities will comprise of desktop and geophysical activities and dependant on the outcome of these phases, targets will be selected for drilling activities. The impact assessment therefore focuses only on the invasive aspects (drilling and associated activities) as these will have the potential to impact on the biophysical and social environment.

The impact assessment is furthermore separated into two distinct phases, namely:

- ✓ Site establishment (site establishment);
- ✓ Operational phase (Drilling), and.
- ✓ Decommissioning

Site Establishment

- **Cultural and Heritage Resources**

  This stage entails clearing a maximum of 0.64ha per site to cater for the drill rig setup including associated equipment. The total anticipated area for this proposed prospecting application is 2.56 ha as there are four (4) anticipated drill sites. This needs to be considered in the context of the entire proposed prospecting right area of more than 9243.0078 hectares. This activity has the potential to impact on heritage artefacts, heritage sites and grave yards. The impacts could potentially be **significant (13(S)).** The following mitigation measures will be implemented to reduce the potential impact to ***low (5(L)***:

  - ✓ Heritage Impact Assessment shall be conducted by an independent competent specialist prior the drilling site establishment. This will ensure that all impacts on artefacts, heritage sites and graveyards in order to establish and implement mitigation measure to avoid significant impacts, where such significant impact cannot be avoided be minimised and mitigated.
  - ✓ All De Beers and contractor personnel involved in the construction activities will be made aware of the locations of all identified heritage resources, the necessity of avoiding impacts on such resources and the penalties for damaging them (once drill sites have been identified, these sites will be screened by a qualified archaeologist/cultural heritage specialist);
  - ✓ Personnel will be informed about the consequences of unlawful removal of cultural and historical remains and artefacts associated with heritage sites. It will be emphasised that archaeological artefacts such as potsherds, stone tools, grinding stones, etc. must be left in situ and undisturbed;
  - ✓ A safe distance of at least 50 metres will be maintained between the identified heritage resource and the construction activities. The heritage feature should be cordoned off with stakes and Chevron tape; and
  - ✓ If any heritage resources are discovered as a result of the construction/set-up activities, such activities will cease with immediate effect and a qualified archaeologist will be commissioned to assess their significance and determine appropriate mitigation measures. This may include obtaining authorisation (permits) from SAHRA to conduct mitigation measures if any heritage resources have been affected. Authorisation must be obtained from SAHRA before any mitigation measures are implemented.

- **Noise**

  Typical noise levels generated by various types of construction equipment are listed in Table 6. Conservative attenuation conditions, related to intervening ground conditions and screening, have been applied.

Table 1: Typical noise levels generated by construction equipment

Equipment	Typical operational Noise level at given offset (dBA)							
	5m	10m	25m	50m	100m	250m	500m	100m
Air compressor	91	85	77	71	65	57	51	46
Crane (mobile)	93	87	79	73	67	59	53	47
Dozer	95	89	81	75	69	61	55	49
Pump	86	80	72	66	60	52	46	40
Rock Drill	108	102	94	88	82	74	68	62
Trucks	87	81	73	67	64	60	57	54

In South Africa, the noise impact on human receptors is evaluated in terms of the SANS 10103 guidelines for sound pressure levels as listed in 7.

Table 2: Noise level standards for various districts

Type of District	Equivalent continuous rating level $L_{Req.T}$ for ambient noise - dBA					
	Outdoors			Indoors with windows open		
	Day-night	Daytime	Night	Day-	Daytime	Night-
Rural districts	45	45	35	35	35	25
Suburban district	50	50	40	40	40	30
Urban traffic	55	55	45	45	45	35
Urban districts	60	60	50	50	50	40
Central business district	65	65	55	55	55	45
Industrial district	70	70	60	60	60	50

Daytime and night-time refer to the hours from 06h00 to 22h00 and 22h00 to 06h00 respectively.

Taking into account the existing background noise levels of the general area which is rural in nature, the significance of the noise caused by the drilling rig travelling to and being established on each site, vehicles going to and from each drilling site and the voices of the drilling crew, the impact is assessed as being ***Low (4(l))*** significance before mitigation. Although mitigation measure are put in place the significance rating remains the same at low ***(4(l))*** significance by limiting the site establishment activities to daylight hours (06h00 to 18h00) and not undertaking such activities at all on Sundays and public holidays, as well as by applying a separation distance of a minimum 500m, but preferably 1000m between drill sites and any dwellings. The vehicles on site are limited to three LDVs and one water truck. It must be noted that the speed limit for driving within a community and prospecting right shall be limited to 60Km/h.

- **Visual**

  The visual impact of the construction / setup activities is assessed as being of ***Significant (16(S))*** significance before mitigation. The impact can be reduced to one of ***medium (12(M))*** significance by taking into account available vegetation screening, the locations of

visual receptors on the prospecting areas and adjacent properties and locating the drilling rig in a way that it is screened from points of visual reception wherever possible.

- **Dust fall**
  Acceptable dust fall rates In terms of the National Dust Control Regulations (GN R. 827 of 1 November 2013) are presented in Table 8. In terms of these regulations, the local air quality officer may prescribe a dust fall monitoring programme, the implementation of dust control measures and continuous ambient air quality monitoring for PM_{10}.

Table 3: Acceptable dust fall rates

Restriction Areas	Dust fall rate (D) (mg/m^2/Day, 30-day average)	Permitted frequency of exceeding dust fall rate
Residential area	D < 600	Two within a year, not sequential months
Non-residential area	600 < D < 1 200	Two within a year, not sequential months

The method to be used for measuring dust fall rate and the guideline for locating sampling points shall be ASTM D1739: 1970, or equivalent method.

It is important to note that people experience dust deposition as a nuisance effect, and that there are no direct human health implications because the dust is not inhaled. Heavy dust deposition can have detrimental effects on plants if the leaves are smothered to the extent where transpiration and photosynthesis are affected.

The proposed operation falls within the boundaries of the Capricorn District Municipality's and De Beers may be required to operate within the air quality requirements of the Municipality's Air Quality Management Plan.

The impact of dust generation by vehicles travelling over unpaved areas is assessed as being of ***medium (8(M))*** significance before mitigation. The impact can be reduced to one of ***low (2(l))*** significance by wet suppression and enforcement of low vehicle speeds.

- **Soil and vegetation disturbance**
  The impacts of drilling (drill pad clearing and compaction) have been assessed as being of ***medium (8M)*** significance before mitigation. The impact can be reduced to ***low (5(L))*** significance by limiting the activities and clearance to the smallest area that is necessary and rehabilitating the disturbed area as soon as possible. Furthermore, no clear scraping (dozing) will be carried out unless absolutely necessary to establish a level drill pad. Rather that surface vegetation be cleared to make way for the drilling rig leaving the roots intact so that vegetation can coppice and regrow.

- **Soil, surface water and groundwater contamination**
  The impact of contamination with hydrocarbons and disturbance of water resources is assessed as being of ***significant (12(M))*** significance before mitigation. The impact can be reduced to one of ***low (5(m))*** significance by ensuring that measures are put in place to prevent any drilling activities within 100m from a water course. Maintaining all equipment as per supplier specification and lining under the drill rig and diesel bowser with PVC plastic lining to contain any spillages, should it occur including having oil spill kit as a recovery measures.

- **Conflict between local residents/landowners and construction personnel**
  The prospecting sites are located in a rural farming area with farm dwellings. Some landowners cherish the peaceful and quiet lifestyle of the area and friction between local residents and a crew of strangers is very possible. The potential for conflict is assessed as being of ***high (22(H)) significance***, but it can be reduced to one of ***significant (18(S))*** significance by taking appropriate social management measures as set out further below in this section.

Operational Phase

- **Cultural and Heritage Resources**
  Drilling shall only be conducted on the target in which the heritage impact assessment was conducted and mitigation measures implemented. Therefore the impact could be of ***low (4(L))*** significance. The significant rating will remain the same after mitigation measures at ***low (4(L).***
  - ✓ Drilling equipment moving on site will, where ever possible, be confined to established roads and tracks. Where this is not possible, access routes will be walked prior to entry of equipment to ensure that there are no graves present. Should graves be identified, the access route will be realigned to avoid such heritage resources, which will then be clearly marked with stakes and Chevron tape to minimise risk of accidental damage.
  - ✓ Efforts to achieve satisfactory prospecting results will employ appropriate methodologies aimed at the protection and conservation of heritage resources;
  - ✓ All De Beers and contractor personnel involved in the prospecting activities will be made aware of the locations of all identified heritage resources, the necessity of avoiding impacts on such resources and the penalties for damaging them;
  - ✓ Personnel will be informed about the consequences of unlawful removal of cultural and historical remains and artefacts associated with heritage sites. It will be emphasised that archaeological artefacts such as potsherds, stone tools, grinding stones, etc. must be left in situ and undisturbed.
  - ✓ A safe distance of at least 50 metres will be maintained between the identified heritage resource and drilling rig or any other infrastructure associated with the prospecting activities; and
  - ✓ Where necessary, directional drilling will be practised to assess ore reserves situated below identified heritage resources, without affecting such resources;
  - ✓ If any heritage resources are discovered as a result of the prospecting activities, such activities will cease with immediate effect and a qualified archaeologist will be commissioned to assess their significance and determine appropriate mitigation measures. This may include obtaining authorisation from SAHRA to conduct mitigation measures if any heritage resources have been affected. Authorisation must be obtained from SAHRA before any mitigation measures are implemented.

- **Noise**
  The noise impact caused by the operation of the drilling rig, vehicles travelling to and from each drilling site and the voices of the drilling crew is assessed as being of ***medium (8(M))*** significance. The impact can be reduced to one of ***low (4(L))*** significance by limiting the prospecting activities to daylight hours (07h00 to 18h00) and not undertaking such activities at all on Sundays and public holidays. Furthermore, a separation distance

of minimum 500m, but preferably 1000m should be maintained between drill sites and dwellings as far as possible.

- **Visual**
  The visual impact of the prospecting activities is assessed as being of ***Significant (16(S))*** significance. It can be reduced to one of ***medium (12(M))*** significance by appropriate location of the drilling rig as described above for the construction/setup phase.

- **Dust fall**
  The impact of dust generated by vehicles travelling over unpaved areas is assessed as being of ***Medium (8(M))*** significance, but it can be readily mitigated to one of ***low (2(L))*** significance by enforcement of low vehicle speeds, as well as by applying a separation distance of a minimum 500m, but preferably 1000m between drill sites and any dwellings.

- **Disturbance of soil and vegetation**
  Disturbance of soil and vegetation in areas where drilling is done is rated as being of ***Low (5(L))*** significance. The impact can be reduced to one of ***low (2(L))*** significance by prior delineation of the drill site area via geophysical characterisation and drilling in order to minimise the area that needs to be cleared. Furthermore, no clear scraping (dozing) be carried out unless absolutely necessary to establish a level drill pad. Rather that surface vegetation be cleared to make way for the drilling rig leaving the roots intact so that vegetation can coppice and regrow.

- **Soil, surface water and groundwater contamination**
  The potential contamination of soil, surface water and groundwater with hydrocarbons is assessed as an impact of ***Medium (8(M))*** significance. The impact can be reduced to one of ***low (5(L))*** significance by implementing the measures recommended for the construction phase. Drilling muds will contained in lined drill sumps and this material will be removed from site and disposed in a licensed disposal facility.

- **Friction between local residents/landowners and construction personnel**
  The potential for conflict between local residents/landowners and prospecting personnel is assessed as being of ***High (22(H))*** significance, but it can be reduced to one of ***High (18(S))*** significance by taking appropriate social management measures – see Table 6 below. **Decommissioning phase**: Decommissioning of borehole sites will take place immediately after each borehole has been completed and the drilling rig is moved to the next site.

Assessment of potential cumulative impacts

The cumulative impact assessment considers a scenario where more than one drilling rig and drill site is in operation at any point in time throughout the duration of the prospecting programme.

- The cumulative noise impact of the proposed prospecting operations on the above sensitive receptors is assessed as being of ***significant (17(S))*** significance before mitigation. The impact can be reduced to one of ***Medium (8(M))*** significance by limiting the construction / setup activities to daylight hours (06h00 to 18h00) and not undertaking such activities at all on Sundays and public holidays;

- The cumulative visual impact on the above sensitive receptors is assessed as being of ***Significant (16(S))*** significance prior to mitigation;
- Without mitigation, the potential cumulative impact of dust generation on the above sensitive receptors is assessed as being of ***Medium (8(M))*** significance;
- A total of 8 boreholes will potentially be drilled with the footprint of 0.64 ha per drill site. This combined footprint area would total a maximum of 2.56 hectares at the end of the prospecting programme once all holes have been drilled and then rehabilitated.
- Without mitigation, the potential cumulative impact of soil, surface water and groundwater contamination, as experienced by the sensitive receptors, is assessed as being of ***medium (8(M))*** significance.

Proposed mitigation measures to minimise adverse impacts

- **List of actions, activities, or processes that have sufficiently significant impacts to require mitigation**

Although none of the unmitigated impacts have been assessed as being of ***high (above 21(H))*** significance, the following potential impacts do require mitigation:

- Once drill sites have been identified, these sites will be assessed by qualified specialist in the following fields, to identify potential for significant impacts and determine measures to be put in place to prevent significant impacts, where significant impacts cannot all together prevented minimised and mitigated:
  - ✓ archaeologist/cultural heritage specialist
- Generation of noise near residential areas, lodges and guest houses must be avoided to ensure a lack of intrusive noise levels and compliance with the standards for rural areas as indicated in Table 7;
- Establishment of the drill sites or exploration camp in areas that are visually exposed when near residential areas, lodges and guest houses;
- Dust fall, particularly near residential areas, lodges, guest houses and growing crops;
- Disturbance of soil and vegetation – at all the prospecting drill sites (once drill sites have been identified, then an ecology screening survey will need to be undertaken in order to identify any red data/species of concern that need to be avoided);
- Contamination of soil, surface water and groundwater – at all the prospecting drill sites; and
- Friction between local residents and prospecting / drilling contractor personnel.

Concomitant list of appropriate technical or management options

The following mitigation measures will be implemented:

- **Cultural and heritage**
  - ✓ four drill sites are anticipated, these sites will be screened by a qualified archaeologist/cultural heritage specialist in order to identify any cultural/heritage features;
  - ✓ Efforts to achieve satisfactory prospecting results will employ appropriate methodologies aimed at the protection and conservation of heritage resources;

- ✓ All De Beers and contractor personnel involved in the prospecting activities will be made aware of the locations of all identified heritage resources, the necessity of avoiding impacts on such resources and the penalties for damaging them;
- ✓ Personnel will be informed about the consequences of unlawful removal of cultural and historical remains and artefacts associated with heritage sites. It will be emphasised that archaeological artefacts such as potsherds, stone tools, grinding stones, etc. must be left in situ and undisturbed;
- ✓ A safe distance of at least 50 metres will be maintained between the identified heritage resource and drilling rig or any other infrastructure associated with the prospecting activities;
- ✓ Where necessary, directional drilling will be practised to assess ore reserves situated below identified heritage resources, without affecting such resources;
- ✓ If any heritage resources are discovered as a result of the prospecting activities, such activities will cease with immediate effect and a qualified archaeologist will be commissioned to assess their significance and determine appropriate mitigation measures. This may include obtaining authorisation (permits) from SAHRA to conduct mitigation measures if any heritage resources have been affected. Authorisation must be obtained from SAHRA before any mitigation measures are implemented.

Diligent implementation of the above measures is expected to reduce the potential impacts from a ***significant (13 (S))*** significance to a ***low (5(L))*** significance.

- **Noise**
  - ✓ Construction/setup, operational and decommissioning activities will be limited to daylight hours (07h00 to 18h00) on Mondays to Saturdays and will not be undertaken at all on Sundays and public holidays;
  - ✓ A separation distance of a minimum 500m, but preferably 1000m should be maintained between drill sites and dwellings as far as possible;
  - ✓ Noise abatement equipment, such as mufflers on diesel engines, will be maintained in good condition; and
  - ✓ If intrusive noise levels are experienced by any person at any point, the source of the noise will be moved if practical, or it will be placed in an acoustic enclosure, or an acoustic barrier will be erected between the source and the recipient.

  The above measures should reduce the significance of the potential noise impacts from ***Medium (8(M))*** to ***low (2(L))***.

- **Visual**
  - ✓ The drilling rig and other visually prominent items on the site will be located in consultation with the landowner;
  - ✓ Make use of existing vegetation as far as possible to screen the prospecting operations from view; and
  - ✓ If necessary, the operations can be screened from view by erecting a shade cloth barrier.

  The above measures should reduce the significance of the potential visual impacts from ***Significant (16(S))*** to ***Medium (12(M))***.

- **Dust fall**
  - ✓ Low vehicle speeds will be enforced on unpaved surfaces;
  - ✓ A separation distance of a minimum 500m, but preferably 1000m should be maintained between drill sites and dwellings as far as possible; and
  - ✓ Wet suppression will be applied to ensure that no visible dust is raised by any of the prospecting operations.

  The above measures should reduce the significance of the potential dust fall impacts from ***Medium (8(M))*** to ***low (2(L))***.

- **Disturbance of soil and vegetation**
  - ✓ The soil disturbance and clearance of vegetation at drill pad areas will be limited to the absolute minimum required; and
  - ✓ Disturbed areas will be re-vegetated with locally indigenous species as soon as possible.
  - ✓ No clear scraping (dozing) be carried out unless absolutely necessary to establish a level drill pad. Rather that surface vegetation be cleared to make way for the drilling rig leaving the roots intact so that vegetation can coppice and regrow.

  The above measures are expected to reduce the significance of the potential impact from ***Significant (8(S))*** to ***Low (5(L))***.

- **Contamination of soil, surface water and groundwater**
  - ✓ In light of the presence of the natural wetlands within the proposed prospecting right application. A wetland delineation specialist study shall be conducted prior to any invasive (Drilling) activities being conducted. To ensure that measures are put in place to prevent any drilling activities within 100m from a water course and to prevent impacts on wetlands systems.
  - ✓ Proper vehicle maintenance;
  - ✓ Refuelling will be done with care to minimise the chance of spillages;
  - ✓ Drilling muds will contained in lined drill sumps and this material will be removed from site and disposed in a licensed disposal facility;
  - ✓ A spill kit will be available on each site where prospecting activities are in progress; and
  - ✓ Any spillages will be cleaned up immediately.

  The above measures should reduce the significance of the potential impacts from ***Significant (13(S))*** to ***low (5(L))***.

- **Friction between local residents/landowners and construction/operations personnel.**
  - ✓ All operations will be carried out under the guidance of a strong, experienced manager with proven skills in public consultation and conflict resolution;
  - ✓ All prospecting personnel will be made aware of the local conditions and sensitivities in the prospecting area and the fact that some of the local residents may not welcome the prospecting activities in the area;

  The above measures should reduce the potential for conflict between prospecting personnel and local residents from ***high (22(H))*** to ***low (8(M)***.

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).

NAME OF ACTIVITY *(E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc…etc…etc*	**POTENTIAL IMPACT** *(Including the potential impacts for cumulative impacts)*	**ASPECTS AFFECTED**	**PHASE** **In which impact is anticipated** *(E.g. Construction, commissioning, operational Decommissioning, closure, post-closure)*	**SIGNIFICANCE if not mitigated**	**MITIGATION TYPE** *(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g. Modify through alternative method. Control through noise control Control through management and monitoring through rehabilitation.*	**SIGNIFICANCE if mitigated**
<u>Site establishment activities:</u> Clearing of vegetation - Topsoil stripping & stockpiling - Drill pad compaction - Erection of office, toilets, fuel storage (if not by road tanker), water	Cultural and Heritage	Destruction and/or loss of Cultural and Heritage Resources	Construction / Set-up	13(S)	A heritage survey by qualified archaeologist is required prior to any site activities on undisturbed land or access routes. If any heritage resources are discovered as a result of the prospecting activities, such activities will cease with immediate effect and a qualified archaeologist will be commissioned to assess their significance and determine appropriate mitigation measures.	*5(L)*

tanker, core storage. - Vehicle movement - Waste management					All De Beers and contractor personnel will be made aware of the locations of all identified heritage resources, the necessity of avoiding them. Personnel will be informed about the consequences of unlawful removal of cultural and historical remains and artefacts associated with heritage sites. A safe distance of at least 50 metres will be maintained between the identified heritage resource and prospecting activities. Where necessary, directional drilling will be practised to assess ore reserves situated below identified heritage resources.	
	Noise	Noise Generation	Construction / Set-up	*4(L)*	Construction/setup, operational and decommissioning activities will be limited to daylight hours on Mondays to Saturdays and no activities on Sundays and public holidays. Separation of distance of minimum 500m, but	*4(L)*

					preferably 1000m to be maintained between drill sites and dwellings. Noise abatement equipment, such as mufflers on diesel engines, will be maintained in good condition. If intrusive noise levels are experienced by any person at any point, the source of the noise will be moved if practical, or it will be placed in an acoustic enclosure, or an acoustic barrier will be erected between the source and the recipient.	
	Visual	Visual intrusion	Construction / Set-up	16(S)	The drilling rig and other visually prominent items on the site will be located in consultation with the landowner. Make use of existing vegetation as far as possible to screen the prospecting operations from view. If necessary, the operations can be screened from view by erecting a shade cloth barrier.	12(M)
	Dust fall	Dust fall & nuisance from activities	Construction / Set-up	8(M)	Separation of distance of minimum 500m, but preferably 1000m to be	2(L)

					maintained between drill sites and dwellings. Low vehicle speeds will be enforced on unpaved surfaces.	
	Soil and vegetation	Soil and vegetation disturbance from drill pad preparation	Construction / Set-up	13(S)	Owing to the presence of the Carletonville Dolomite Grassland which is classified as vulnerable, including Vaal-vet sand and Western Highveld Sandy Grassland being endangered an independent ecologist shall be appointed to conduct an ecology screening survey. This is to ensure that measures are put in place to prevent impacts on vulnerable and endangered species. The soil disturbance and clearance of vegetation at drill pad areas will be limited to the absolute minimum required. No clear scraping (dozing) will be carried out unless absolutely necessary to establish a level drill pad. Rather that surface vegetation be cleared to make way for the drilling rig leaving the roots intact so	5(L)

					that vegetation can coppice and regrow. Disturbed areas will be re-vegetated with locally indigenous species as soon as possible.	
	Soil, surface water and groundwater	Soil, surface water and groundwater contamination from hydrocarbons	Construction / Set-up	13(S)	Proper vehicle maintenance. Refuelling will be done with care to minimise the chance of spillages. A spill kit will be available on each site where prospecting activities are in progress. Any spillages will be cleaned up immediately. Drilling muds will contained in lined drill sumps and this material will be removed from site and disposed in a licensed disposal facility.	5(L)
	Social	Friction between local residents/land owners and construction personnel	Construction / Set-up	22(H)	All operations will be carried out under the guidance of a strong, experienced manager with proven skills in public consultation and conflict resolution. All prospecting personnel will be made aware of the local conditions and sensitivities in	12(M)

					the prospecting area and the fact that some of the local residents may not welcome the prospecting activities in the area. There will be a strict requirement to treat local residents with respect and courtesy at all times.	
<u>Exploration drilling:</u> - Drilling - Drill maintenance & refuelling - Core sample collection & storage - Vehicle movements - Waste generation & management	Cultural and Heritage	Destruction or loss of Cultural and Heritage Resources	Operations	4(L)	All De Beers and contractor personnel will be made aware of the locations of all identified heritage resources, the necessity of avoiding them. Personnel will be informed about the consequences of unlawful removal of cultural and historical remains and artefacts associated with heritage sites. A safe distance of at least 50 metres will be maintained between the identified heritage resource and prospecting activities. Where necessary, directional drilling will be practised to assess ore reserves situated below identified heritage resources.	4(L)
	Noise	Noise Generation	Operations	8(M)	Construction/setup, operational and	4(L)

					decommissioning activities will be limited to daylight hours on Mondays to Saturdays and no activities on Sundays and public holidays. Separation of distance of minimum 500m, but preferably 1000m to be maintained between drill sites and dwellings. Noise abatement equipment, such as mufflers on diesel engines, will be maintained in good condition. If intrusive noise levels are experienced by any person at any point, the source of the noise will be moved if practical, or it will be placed in an acoustic enclosure, or an acoustic barrier will be erected between the source and the recipient.	
	Visual	Visual intrusion	Operations	16(S)	The drilling rig and other visually prominent items on the site will be located in consultation with the landowner. Make use of existing vegetation as far as possible to screen the prospecting	12M

					operations from view. If necessary, the operations can be screened from view by erecting a shade cloth barrier.	
	Dust fall	Dust fall & nuisance from activities	Operations	8(M)	Separation of distance of minimum 500m, but preferably 1000m to be maintained between drill sites and dwellings. Low vehicle speeds will be enforced on unpaved surfaces.	2(L)
	Soil and vegetation	Soil and vegetation disturbance from drill pad preparation	Operations	5(L)	The soil disturbance and clearance of vegetation at drill pad areas will be limited to the absolute minimum required. No clear scraping (dozing) be carried out unless absolutely necessary to establish a level drill pad. Rather that surface vegetation be cleared to make way for the drilling rig leaving the roots intact so that vegetation can coppice and regrow. Disturbed areas will be re-vegetated with locally indigenous species as soon as possible.	2(L)
	Soil, surface water and	Soil, surface water and	Operations	8(M)	In light of the presence of the natural wetlands within the	5(L)

	groundwater	groundwater contamination from hydrocarbons			proposed prospecting right application. A wetland delineation specialist study shall be conducted prior to any invasive (Drilling) activities being conducted. To ensure that measures are put in place to prevent any drilling activities within 100m from a water course and to prevent impacts on wetlands systems. Proper vehicle maintenance. Refuelling will be done with care to minimise the chance of spillages. A spill kit will be available on each site where prospecting activities are in progress. Any spillages will be cleaned up immediately; and Drilling muds will contained in lined drill sumps and this material will be removed from site and disposed in a licensed disposal facility.	
	Social	Friction between local residents/land owners and construction personnel	Operations	22(H)	All operations will be carried out under the guidance of a strong, experienced manager with proven skills in public consultation and conflict resolution.	18(S)

					All prospecting personnel will be made aware of the local conditions and sensitivities in the prospecting area and the fact that some of the local residents may not welcome the prospecting activities in the area. There will be a strict requirement to treat local residents with respect and courtesy at all times.	
Assessment of Potential Cumulative Impacts						
	Noise	Noise generation	Construction / set-up and Operation	17(S)	As above	8(M)
	Visual	Visual intrusion	Construction / set-up and Operation	16(S)	As above	4(L)
	Dust fall	Dust fall & nuisance from activities	Construction / set-up and Operation	8(M)	As above	2(L)
	Soil and vegetation	Soil and vegetation disturbance from drill pad preparation	Construction / set-up and Operation	8(M)	As above	5(L)
	Soil, surface water and groundwater	Soil, surface water and groundwater contamination from hydrocarbons	Construction / set-up and Operation	8(M)	As above	5(L)

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):

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
No specialist studies have been undertaken. A desktop analysis has been followed that informs the compilation of this assessment. The EMP does however include the commitment that an independent professionals shall be appointed to conduct a heritage, wetland delineation and ecological screening assessment. This will only be undertaken once non-invasive early exploration activities have been completed and, should the findings of those investigations determine that there is a need to progress to exploration drilling. It is only at that stage that the potential areas of drilling interest will be known.	N/A		

I) Environmental impact statement

(i) Summary of the key findings of the environmental impact assessment;

The majority of the prospecting activities are non-invasive and hence will have no environmental or social impact. The invasive activities will entail the drilling of approximately 8 exploration holes; which will have a minimal environmental and social impact as each drill site will be confined to an area of approximately 0.64 hectares. A total of four drill sites are anticipated and therefore the total anticipated area is 2.56 Ha which need to be viewed in the context of the entire prospecting license area under application which covers more than 9243.0078 hectares.

The assessed impact ratings after implementation of the mitigation measures described above are as follows:

- ✓ Cultural and heritage – ***low (5(L))*** *significance*;
- ✓ Noise – ***low (2(L))*** *significance*;
- ✓ Visual impact – ***medium (12(M))*** *significance*;
- ✓ Dust fall – ***low (2(L))*** *significance*;
- ✓ Disturbance of soil and vegetation – ***medium (8(M))***, reducing to ***low (5(L))*** during the decommissioning phase;
- ✓ Contamination of soil, surface water and groundwater – ***low (5(L))***; and
- ✓ Friction between local residents and prospecting personnel – ***medium (8(M))***.

All of the identified impacts will occur for a limited and the extent of the impacts will be localised. All of the identified impacts can be suitably mitigated with the residual impact ratings being of ***low*** significance.

After drilling activities have been completed and the drill pads rehabilitated to pre-drilling status, the impacts will cease to exist.

(ii) 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 D

Please refer to **Appendix D** for the Environmental Sensitivities Map including the area of interest (AOI) for proposed prospecting activities.

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

- Possible destruction or loss of Cultural and Heritage Resources during the construction/set-up phase as well as during the operational phase as drilling commencing;
- Noise Generation from construction / set-up and operational activities of drilling;
- Visual intrusion caused by the drilling activities in the largely rural setting;
- Dust fall & nuisance from construction / drill site set-up;

- Soil and vegetation disturbance from drill pad preparation during the construction / set-up and operational phase as contractors rehabilitate one site and move to the next site and prepare it;
- Soil, surface water and groundwater contamination from hydrocarbons during the construction/set-up and operational activities which include drill rig operation and use of vehicles on site; and
- Friction between local residents/landowners and construction personnel during the course of the construction / set-up and operational drilling activities.

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 objectives of the EMPr will be to:

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

Through the implementation of the proposed mitigation measures it is anticipated that the identified social & environmental impacts can be managed and mitigated effectively. Through the implementation of the mitigation and management measures it is expected that:

- Heritage/cultural resources can be managed by avoidance of known resources and through consultation with landowners/stakeholders. Contractor personnel will also be briefed of these sensitivities and consequences of any damage/removal of such features; Should the exploration program advance to the drilling stage, a Phase 1 Heritage Assessment will be undertaken prior to identification of drill sites, once areas of drilling interest have been determined
- Noise generation can be managed through consultation and restriction of operating hours and by maintaining equipment and applying noise abatement equipment if necessary;
- Visual intrusion can be managed through consultation with landowners/stakeholders and by suitable siting of drill pads and use of screens (natural vegetation or shade cloth etc);
- Dust fall can be managed by reducing driving speeds when driving on unpaved roads and the use of water during drilling;
- An ecology screening survey will be required on undisturbed land and access routes in order to identify any red data / species of concern prior to any site activities being undertaken;
- Wetland delineation to ensure that impacts on natural wetlands are prevented.
- Soil disturbance and clearance of vegetation at drill pad areas will be limited to the absolute minimum required and disturbed areas will be re-vegetated with locally indigenous species as soon as possible;

- Soil, surface water and groundwater contamination by hydrocarbons can be managed by conducting proper vehicle maintenance, refuelling with care to minimise the chance of spillages and by having a spill kit available on each site where prospecting activities are in progress;
- Social friction with landowners can be managed by employing strong, experienced personnel with proven skills in public consultation and conflict resolution during stakeholder consultation phases. All prospecting personnel will be made aware of the local conditions and sensitivities in the prospecting area and that they treat local residents with respect and courtesy at all times.

n) Aspects for inclusion as conditions of Authorisation.

Any aspects which must be made conditions of the Environmental Authorisation

It is the opinion of the EAP that the following conditions should form part of the authorisation:

- Maintain a buffer of 100m from a water course;
- Maintain a minimum 500m (preferably 1000m) buffer from any infrastructure or dwelling;
- Conduct a heritage survey of the identified drill sites and access routes once these are known and prior to any activities being undertaken at these sites;
- Landowners and land occupiers should be engaged (re-consulted) at least 1 month prior to any site activities being undertaken once drill sites are known.

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

(Which relate to the assessment and mitigation measures proposed)

The location of drill sites is not yet known and will be identified through the phased approach of the prospecting programme. This assessment is therefore based on a desktop approach at a broad scale and assuming that drilling could occur anywhere around the anomalies identified for this programme.

Four drill sites are anticipated, then specific focus will be given to Heritage screening and assessment along possible access routes and at potential drilling sites in order to ensure that Heritage artefacts are not inadvertently damaged. In addition, landowners will be re-engaged at this stage to communicate De Beers's intent to progress to drilling and to discuss the proposed drilling activities and identified locations with the landowner at that point in 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 opinion of the EAP that the proposed prospecting activities should be authorised. In reaching this conclusion the EAP has considered that;

- The exploration program will be developed in a stepwise manner commencing with non-invasive activities to bring refinement to understanding of the geological anomaly;

- Should the exploration program advance to include the need for exploration drilling, the environmental impacts associated with the limited drilling activities are deemed to be minimal provided that the proposed mitigation is implemented;
- The spatial extent of the physical impact is 0.64 hectare per drill site over a prospecting right license area of 9243.0078 hectares; a maximum of four drill sites will be established in total throughout the duration of the drilling programme and therefore the maximum anticipated footprint is 2.56 ha;
- With appropriate care and consideration the impacts resulting from drilling can be suitably avoided, minimised or mitigated;
- With implementing the appropriate rehabilitation activities, the impacts associated with the drilling activities can be reversed; and
- Without implementation of prospecting activities the knowledge concerning the potential mineral resource within the prospecting right area will not be confirmed.

ii) Conditions that must be included in the authorisation

It is the opinion of the EAP that the following conditions should form part of the authorisation:

- Maintain a buffer of 100m from a water course;
- Maintain a 500m buffer from any infrastructure or dwelling;
- Conduct a heritage survey of the identified drill sites and access routes across undisturbed land once these are known and prior to any activities being undertaken at these sites;
- Conduct a wetland delineation specialist study shall be conducted prior to any invasive (drilling) activities being conducted. To ensure that measures are put in place to prevent any drilling activities within 100m from a water course and to prevent impacts on wetlands systems; and
- Landowners and land occupiers should be engaged (re-consulted) at least 1 month prior to any site activities being undertaken once drill sites are known.

q) Period for which the Environmental Authorisation is required.

The authorisation is required for the duration of the prospecting right which is an initial 5 years plus a potential to extend the right by an additional 3 years. Therefore a total period of **8 years** may be required.

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 is provided at the end of this report.

s) Financial Provision

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

A financial provision of approximately **R 355514** has been budgeted for the prospecting programme over 5 years, which includes rehabilitation activities for. A breakdown of these costs is presented in the Table below.

No.	Description	Unit	A Quantity	B Master Rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	0	13	1	1	0
2 (A)	Demolition of steel buildings and structures	m2	0	180	1	1	
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	266	1	1	0
3	Rehabilitation of access roads	m2	0.00	32	1	1	0
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	313	1	1	0
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	171	1	1	0
5	Demolition of housing and/or administration facilities	m2	0	361	1	1	0
6	Opencast rehabilitation including final voids and ramps	ha	0	189071	1	1	0
7	Sealing of shafts adits and inclines	m3	0	97	1	1	0
8 (A)	Rehabilitation of overburden and spoils	ha	0	126047	1	1	0
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0	156989	1	1	0
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0	455971	1	1	0
9	Rehabilitation of subsided areas	ha	0	105545	1	1	0
10	General surface rehabilitation	ha	2.56	99851	1	1	255618.56
11	River diversions	ha	0	99851	1	1	0.00
12	Fencing	m	0	114	1	1	0.00
13	Water management	ha	0	37966	1	1	0.00
14	2 to 3 years of maintenance and aftercare	ha	0	13288	1	1	0.00
15 (A)	Specialist study	Sum	0			1	0.00
15 (B)	Specialist study	Sum				1	0.00
					Sub Total 1		255618.56
1	Preliminary and General		30674.2272		weighting factor 2 1		30674.23
2	Contingencies		25561.856				25561.86
					Subtotal 2		311854.64
					VAT (14%)		43659.65
					Grand Total		**355514**

i) Explain how the aforesaid amount was derived.

The drilling contractor will be responsible for rehabilitating the drill pad once the drilling activities have been completed at each exploration hole. This is typically a contractual arrangement between De Beers and the drilling contractor employed to implement drilling activities which include set-up of drill pad, operational drilling activities and the rehabilitation of the drill site after drilling has ceased.

The financial guarantee was calculated using the DMR official financial quantum calculator.

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).*

Funding for prospecting up to and including phase 5 of the work programme of approximately R 57 million is to be obtained internally and is allocated on an annual basis as part of the working cost budget of DBCM. Work is approved on a phase by

phase basis, dependent on the results obtained i.e. although prospecting work may be provided for financially in the budget for a specific year, it will only take place if justified. Funding for work beyond phase 5 will be allocated on a project by project basis if investment criteria are met. The amount is also reflected in the Prospecting Work Programme submitted to the DMR.

ACTIVITY	YEAR 1 Expenditure (R')	YEAR 2 Expenditure (R')	YEAR 3 Expenditure (R')	YEAR 4 Expenditure (R')	YEAR 5 Expenditure (R')
PHASE 1 – Desktop Study (6 months)	21,520				
PHASE 2 – Target delineation (6 months)	567,497				
PHASE 3 – Testing of Targets & micro-diamond testing (12 months)		4,991,971			
PHASE 4 – Kimberlite delineation & micro-diamond testing (10 months)			5,337,605		
PHASE 5 – Deposit Test: First stage macro-diamond sampling (10 months)			6,110,069	8,726,065	
PHASE 6 – Deposit Assessment: Second stage macro-diamond sampling (15 months)				12,963,478	17,870,065
Prospecting Right fees (9243.0078ha)	9,243	13,865	18,486	23,108	27,729
Annual Total	**598,260**	**5,005,836**	**11,466,160**	**21,712,651**	**17,897,794**
				Total Budget Years 1 to 5	**56,680,700**

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*** *.*

A full consultation process has been implemented during the environmental authorisation process. The purpose of the consultation was to provide affected persons the opportunity to raise any potential concerns. As part of the consultation process the land claims commissioner was contacted to identify if there were any claims on land covered by this application.

Concerns raised has been captured and addressed within the public participation section of this report to inform the decision making process. As the final positioning of the drill sites cannot be confirmed without completion of phase 1 of the prospecting work programme, a recommendation has been made to ensure that the directly affected landowners are re-consulted a minimum of 1 month prior to drilling. The purpose of the re-consultation is to allow for socio-economic impacts on directly affected persons to be raised and where possible addressed.

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

A heritage survey of the drill sites will be conducted prior to drilling in order to identify any cultural or heritage resources of significance. No drill site will be located within 50m of any identified heritage site (which may occur during the prospecting programme). Furthermore, from desktop studies undertaken, no significant heritage artefacts have been identified to occur in the area; however these need to be confirmed by site surveys.

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

The proposed prospecting activities requested as part of this authorisation is the only current viable manner in which a mineral resource can be evaluated to determine its economic viability.

PART B
ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1) Draft environmental management programme.

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) herein as required).*

This has already been covered. Refer to Part A, Section 1(a) of this document.

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 (1)(h) herein as required).*

This has already been covered. Refer to Part A, Section 1(h) of this document.

c) Composite Map *(Provide a map (Attached as an Appendix) 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)*

This has already been covered. Refer to Part A as well as **Appendix D** of this document.

d) Description of Impact management objectives including management statements

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 and adherence to the site EMP; and
- Ensure that chemical and hydrocarbon spillages are avoided, where they cannot all together avoided minimised and mitigated.
- Establish approriate waste management system
- Restore the physical impact of drilling through implementation of concurrent rehabilitation as and when drilling at one site is completed.

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

After prospecting is complete each drill site will be rehabilitated to a state that is safe, stable, re-vegetated, non-polluting, non-eroded and in a state that is suitable for agreed post-closure land use.

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

The drilling activities will use between 5 000L to 10 000L per day which falls withing "small industrial user" where the use is less than twenty cubic metres per day for prospecting. Therefore the water that will be used for the prospecting activities will be sourced on agreement from an existing authorized water user which could be either the land owner or local municipality. The department responsible for water resources shall be consulted with regards to any water related agreement with either the land owner or local municipality prior to drilling. No water will be abstracted in terms of section 21(a) of National Water Act, 1998 (Act no. 36 of 1998).

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

No – Based on the limited water needs of the proposed prospecting activities, water from a legal source will be brought to the drill sites by mobile water tanker as and when required.

The department responsible for water resources shall be consulted with regards to any water related agreement with either the land owner or local municipality prior to drilling.

iv) Impacts to be mitigated in their respective phases

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

ACTIVITIES *(E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc…etc…etc E.g. For mining,- excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)*	**PHASE** *(of operation in which activity will take place. State; Planning and design, Pre-Construction' Construction, Operational, Rehabilitation, Closure, Post closure).*	**SIZE AND SCALE of disturbance** *(volumes, tonnages and hectares or m²)*	**MITIGATION MEASURES** *(describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)*	**COMPLIANCE WITH STANDARDS** *(A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)*	**TIME PERIOD FOR IMPLEMENTATION** *Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:-.. Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.*
Site establishment activities: - Vegetation clearance - Topsoil stripping & stockpiling - Drill pad compaction - Placement of temporary	Construction / set-up phase & Operational phase	Max. 0.64 Ha per drill site	• Undertake heritage survey prior to site activities in order to identify cultural/heritage features. • Avoid cultural/heritage	Heritage Act	Before and during drilling activities

portable toilets and resting place. - Vehicle movements - Waste management <u>Exploration drilling:</u> - Drilling - Drill maintenance & refuelling - Core sample collection & storage - Vehicle movements - Waste generation & management			impacts by maintaining 50m buffer from any identified heritage feature and marking these off. • Any buried artefacts that may be uncovered during site activities will require such activities to stop and a qualified archaeologist will be commissioned to assess their significance and determine appropriate mitigation measures.		
	Construction / set-up phase & Operational phase	0.64 Ha per drill site	• Control noise generation by maintaining equipment. • Limited to daylight hours on Mondays to Saturdays and no activities on Sundays and public holidays. • Maintain a buffer of 500m between drill sites and dwellings. • The resting place shall be located outside of the 82dB zone of the drill site.	SANS 10103 guideline	Before and during drilling activities
	Construction / set-up phase & Operational phase	0.64 Ha per drill site	• The drilling rig and other visually prominent items on the site will be located in consultation with the	n/a	Before and during drilling activities

			landowner; • Make use of existing vegetation as far as possible to screen the prospecting operations from view; and • If necessary, the operations can be screened from view by erecting a shade cloth barrier.		
	Construction / set-up phase & Operational phase	0.64 Ha per drill site	• Low vehicle speeds will be enforced on unpaved surfaces. • Maintain a buffer of 500mbetween drill sites and dwellings.	GN R. 827 (NEM:AQA)	Before and during drilling activities
	Construction / set-up phase & Operational phase	0.64 Ha per drill site	• The soil disturbance and clearance of vegetation at drill pad areas will be limited to the absolute minimum required and will not be dozed or scraped with vegetation roots left intact for later re-growth.	n/a	Before and during drilling activities
	Construction / set-up phase & Operational phase	0.64 Ha per drill site	• All chemicals and hydrocarbons shall be stored within 110% bund wall capacity • Underneath the drill rig or any equipment with	GN R. 704 (NWA)	Before and during drilling activities

			potential oil spillages shall be lined with plastic liner to prevent soil and water contamination. • Avoid hydrocarbon spills by employing proper vehicle maintenance; • Refuelling will be done with care to minimise the chance of spillages; • A spill kit will be available on each site where prospecting activities are in progress; and • Any spillages will be cleaned up immediately. • Drill muds to be contained in lined sump and disposed of off-site at licensed facility.		
	Construction / set-up phase & Operational phase	0.64 Ha per drill site	• All operations will be carried out under the guidance of a strong, experienced manager with proven skills in public consultation and conflict resolution, including environmental coordinator where applicable; • All prospecting personnel	NEMA	Before and during drilling activities

			will be made aware of the local conditions and sensitivities in the prospecting area and the fact that some of the local residents may not welcome the prospecting activities in the area; • There will be a strict requirement to treat local residents with respect and courtesy at all times.		

e) Impact Management Outcomes

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

ACTIVITY *(whether listed or not listed).* *(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing*	**POTENTIAL IMPACT** *(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc….etc…)*	**ASPECTS AFFECTED**	**PHASE** **In which impact is anticipated** *(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)*	**MITIGATION TYPE** *(modify, remedy, control, or stop)* *through* *(e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc)*	**STANDARD TO BE ACHIEVED** *(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.*

plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.).				*E.g.* *- Modify through alternative method.* *- Control through noise control* *- Control through management and monitoring* *- Remedy through rehabilitation.*	
Site establishment activities: - Vegetation clearance - Topsoil stripping & stockpiling - Drill pad compaction - Erection of office, toilets, fuel storage (if not by road tanker), water tanker, core storage. - Vehicle movements - Waste management Exploration drilling: - Drilling - Drill maintenance & refuelling - Core sample collection & storage - Vehicle movements - Waste generation & management	Cultural and Heritage	Destruction or loss of Cultural and Heritage Resources	Construction / set-up phase & Operational phase	• Heritage screening assessment along possible access routes and at potential drilling sites in order to ensure Heritage artefacts are not inadvertently damaged. • Avoid cultural/heritage impacts by maintaining 50m buffer from any identified heritage feature. • Any buried artefacts that may be uncovered during site activities will require such activities to stop and a qualified archaeologist will be commissioned to assess their significance and determine appropriate mitigation measures.	Heritage Act

	Noise	Noise Generation	Construction / set-up phase & Operational phase	• Control noise generation by maintaining equipment. • Limited to daylight hours on Mondays to Saturdays and no activities on Sundays and public holidays. • Maintain a buffer of 500m-1000m between drill sites and dwellings. • If intrusive noise levels are experienced by any person at any point, the source of the noise will be moved if practical, or it will be placed in an acoustic enclosure, or an acoustic barrier will be erected between the source and the recipient.	SANS 10103
	Visual	Visual intrusion	Construction / set-up phase & Operational phase	• The drilling rig and other visually prominent items on the site will be located in consultation with the landowner; • Make use of existing vegetation as far as possible to screen the prospecting operations from view; and • If necessary, the	n/a

				operations can be screened from view by erecting a shade cloth barrier.	
	Dust fall	Dust fall & nuisance from activities	Construction / set-up phase & Operational phase	• Low vehicle speeds will be enforced on unpaved surfaces. • Maintain a buffer of 500m-1000m between drill sites and dwellings.	GN R. 827 (NEM:AQA)
	Soil and vegetation	Soil and vegetation disturbance from drill pad preparation	Construction / set-up phase & Operational phase	• The soil disturbance and clearance of vegetation at drill pad areas will be limited to the absolute minimum required and will not be dozed or scraped with vegetation roots left intact for later re-growth; and • Disturbed areas will be re-vegetated with locally indigenous species as soon as possible.	n/a
	Soil, surface water and groundwater	Soil, surface water and groundwater contamination from hydrocarbons	Construction / set-up phase & Operational phase	• Measures shall be put in place to prevent any drilling activities within 100m from a water course and to prevent impacts on wetlands systems.	GN R. 704 (NWA)

				• Avoid hydrocarbon spills by employing proper vehicle maintenance; • Refuelling will be done with care to minimise the chance of spillages; • A spill kit will be available on each site where prospecting activities are in progress; • Any spillages will be cleaned up immediately and contaminated material will be disposed as licenced hazardous waste site; • Drill muds to be contained in lined sump and disposed of off-site at licensed facility.	
	Social	Friction between local residents/land owners and construction personnel	Construction / set-up phase & Operational phase	• All operations will be carried out under the guidance of a strong, experienced manager with proven skills in public consultation and conflict resolution; • All prospecting personnel will be made aware of the local conditions and sensitivities in the	NEMA

				prospecting area and the fact that some of the local residents may not welcome the prospecting activities in the area; • There will be a strict requirement to treat local residents with respect and courtesy at all times.	

f) Impact Management Actions

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

ACTIVITY *(whether listed or not listed).* *(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power*	**POTENTIAL IMPACT** *(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc….etc…)*	**MITIGATION TYPE** (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g. □ Modify through alternative method. □ Control through noise control □ Control through management and monitoring Remedy through rehabilitation.	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:-.	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)

lines, conveyors, etc…etc…etc.).			Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.	
Site establishment activities: - Vegetation clearance - Topsoil stripping & stockpiling - Drill pad compaction - Erection of office, toilets, fuel storage (if not by road tanker), water tanker, core storage. - Vehicle movements - Waste management Exploration drilling: - Drilling - Drill maintenance & refuelling - Core sample collection & storage - Vehicle movements - Waste generation & management	Cultural and Heritage	• Heritage screening assessment along possible access routes and at potential drilling sites in order to ensure heritage artefacts is not inadvertently damaged. • Avoid cultural/heritage impacts by maintaining 50m buffer from any identified heritage feature. • Any buried artefacts that may be uncovered during site activities will require such activities to stop and a qualified archaeologist will be commissioned to assess their significance and determine appropriate mitigation measures.	Before and during drilling activities	Heritage Act
	Noise	• Control noise generation by maintaining equipment. • Limited to daylight hours on Mondays to Saturdays and no activities on Sundays and public holidays. • Maintain a buffer of 500m-1000m between drill sites and dwellings.	Before and during drilling activities	SANS 10103

		• If intrusive noise levels are experienced by any person at any point, the source of the noise will be moved if practical, or it will be placed in an acoustic enclosure, or an acoustic barrier will be erected between the source and the recipient.		
	Visual	• The drilling rig and other visually prominent items on the site will be located in consultation with the landowner; • Make use of existing vegetation as far as possible to screen the prospecting operations from view; and • If necessary, the operations can be screened from view by erecting a shade cloth barrier.	Before and during drilling activities	n/a
	Dust fall	• Low vehicle speeds will be enforced on unpaved surfaces.	Throughout the project implementation.	GN R. 827 (NEM:AQA)
	Soil and vegetation	• An ecology screening survey will be required on undisturbed land and access routes in order to identify any red data / species of concern prior to any site activities being undertaken; • The soil disturbance and clearance of vegetation at drill pad areas will be limited to the absolute minimum required and will not be dozed or scraped with vegetation roots left intact for later re-growth; and	Before and during drilling activities disturbed areas to be re-vegetated as soon as possible	n/a

		• Disturbed areas will be re-vegetated with locally indigenous species as soon as possible.		
	Soil, surface water and groundwater	• Avoid hydrocarbon spills by employing proper vehicle maintenance; • Refuelling will be done with care to minimise the chance of spillages; • A spill kit will be available on each site where prospecting activities are in progress; • Any spillages will be cleaned up immediately; and • Drill muds to be contained in lined sump and disposed of off-site at licensed facility.	Before and during drilling activities	GN R. 704 (NWA)
	Social	• All operations will be carried out under the guidance of a strong, experienced manager with proven skills in public consultation and conflict resolution; • All prospecting personnel will be made aware of the local conditions and sensitivities in the prospecting area and the fact that some of the local residents may not welcome the prospecting activities in the area; • There will be a strict requirement to treat local residents with respect and courtesy at all times.	Before and during drilling activities	NEMA

i) Financial Provision

(1) Determination of the amount of Financial Provision.

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

After prospecting is complete at each drill site, the land will be rehabilitated to be safe, stable, non–eroded, non-polluting and suitable for agreed post closure land use

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

The closure objectives were reported in the draft BAR and was made available to all registered interested and affected parties.

(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.

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

- Removing all infrastructures, including the drill rig, 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 of in a registered landfill site and the soil returned to in order to rehabilitate the area.
- 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 ripped 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 occur on site.
- Applicable landowner will be requested to inspect the rehabilitated area.

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

The closure objectives are to return the land disturbed by drilling activities back to its original condition. The rehabilitation plan above provides the detail on how this will be achieved. Through experience, we can confirm that effective rehabilitation of drill sites is possible and achievable with the rehabilitation plan set out above.

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

As per Part A, Section (s) (i) of this report.

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

As per Part A, Section (s) (ii) of this report.

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

g) Monitoring of Impact Management Actions
h) Monitoring and reporting frequency
i) Responsible persons
j) Time period for implementing impact management actions
k) Mechanism for monitoring compliance

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
All Prospecting Activities	N/A	Ensure that the prospecting programme is being implemented in line with the approved prospecting works programme	De Beers Geologist	Submit an annual prospecting progress report to DMR
	All commitments contained in the BA Report and accompanying EMPr	Ensure commitments made within the approved BAR and EMPr are being adhered to.	Internal Environmental Coordinator and independent EAP	Undertake and submit an environmental performance audit every two years to DMR
Drilling Activities	Cultural Heritage Resources	Monitor groundwater quality and level within 500m from a drill site (If any). Weekly inspections will cover the following: - Implementation of effective waste management - Establish and implement a stakeholder compliant register on site and ensure that all complaints are responded to	Appointed drilling contractor	Weekly inspection and reporting
	Noise			
	Dust fall			
	Visual			
	Soil & Vegetation			
	Soil, Surface Water & Groundwater			
	Social			
	Housekeeping & maintenance			

	Waste management Rehabilitation	promptly. - Ensure that an oil spill kit is readily available. - Ensure that all chemicals and hydrocarbons are stored within bundwalls - Ensure that the fire brake is maintained. - Rehabilitation of drill pads - Records of water intersections on borehole logs - Control and minimise the development of new access tracks - Appropriate storage and handling of topsoil		
Post Drilling	Groundwater Revegetation Stability Soil erosion Alien invasive species	Monitor the external boreholes within 500m from drill post drilling (if any). The drill site shall be monitored six monthly until a closure certificate is obtained.	Internal Environmental Coordinator	Monitoring report

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

An external environmental performance audit and the BA & EMPr performance assessment shall be conducted annually interchangeably by an independent environmental assessment practitioner and internal environmental assessment practitioner, respectively.

m) Environmental Awareness Plan

De Beers Environmental Awareness Training is part of its Induction process and environmental Management System (EMS). The induction includes:

- Awareness training for contractors and employees;
- Job specific training – training for personnel performing tasks which could cause potentially significant environmental impacts;
- EMS training;
- Comprehensive training – on emergency response, spill management, etc;
- Specialised skills; and
- Training verification and record keeping.

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

Before commencement of the prospecting activities all employees and contractors who are involved with such activities should attend relevant induction and training. It is standard practice for employees and the employees of contractors that will be working on a new project or at a new site to attend an induction course where the nature and characteristics of the project and the site are explained.

The training course should include key information abstracted from the EMP pertaining to the potential environmental impacts, the mitigation measures that will be applied, the monitoring activities that will be undertaken and the roles and responsibilities of contractors' and De Beers personnel.

The full EMP document is also made available to attendees.

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

Environmental risks and how to manage them are dealt with in the induction course referred to in section (m) (i) above. If an incident of environmental pollution or damage does occur it is analysed and appropriate prevention and/or mitigation measures are developed. These measures are added to the EMP and conveyed to the relevant personnel.

All unplanned incidents with the potential to cause pollution or environmental degradation or conflict with local residents will be reported to the Mineral Resources Manager within 24 hours.

Hydrocarbon Spills

Hydrocarbon spills that are considered to be emergency incidents are large-scale spills (cover a surface area >1m^2), resulting from situations such as; a leaking diesel bowser, an oil drum that is knocked over, large spillages from equipment, etc. Activities that are involved in the clean-up of such instances include:

- The containment of the spill,
- The removal of all contaminated material, and
- The disposal (at a licenced hazardous disposal facility) or bioremediation (at a licenced facility) of this material.

Fire

There is the potential for fire to occur in the following locations of the drill site:

- Veld fires across vegetated areas; and
- Vehicles and equipment.

Veld fires: Any person who observes the fire must report it to the fire brigade immediately and then to their supervisor. If possible, additional personnel may be sent to contain the fire, but only if the lives of the personnel will not be endangered.

Vehicles and Equipment: Fire extinguishers will be available at the site where drilling activities will take place and in the vehicles. All staff members will be trained in the use of fire-fighting equipment.

n) Specific information required by the Competent Authority

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

Not applicable at this stage.

2) UNDERTAKING

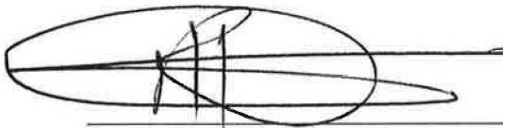
The EAP herewith confirms

a) the correctness of the information provided in the reports [X]

b) the inclusion of comments and inputs from stakeholders and I&APs; [X]

c) the inclusion of inputs and recommendations from the specialist reports where relevant; and [X]

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. [X]



Signature of the environmental assessment practitioner:

De Beers Consolidated Mines (Pty) Ltd
Name of company:

30 December 2016
Date

-END-