



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

ENVIRONMENTAL IMPACT 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: **PG van Zyl (JNR) CC**

TEL NO: **066 480 9500**

FAX NO: -

POSTAL ADDRESS: **P.O. Box 299, Schweizer-Reneke 2780**

FILE REFERENCE NUMBER SAMRAD: **NW30/5/1/1/2/12555 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 mining 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 ENVIRONMENTAL IMPACT ASSESSMENT PROCESS**

The objective of the environmental impact assessment process is to, through a consultative process—

- (a) determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
- (b) describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
- (c) identify the location of the development footprint within the preferred site based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;
- (d) determine the—
 - (i) nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and
 - (ii) degree to which these impacts—
 - (aa) can be reversed;
 - (bb) may cause irreplaceable loss of resources, and
 - (cc) can be avoided, managed or mitigated;
- (e) identify the most ideal location for the activity within the preferred site based on the lowest level of environmental sensitivity identified during the assessment;
- (f) identify, assess, and rank the impacts the activity will impose on the preferred location through the life of the activity;
- (g) identify suitable measures to manage, avoid or mitigate identified impacts; and
- (h) identify residual risks that need to be managed and monitor

PART A
SCOPE OF ASSESSMENT AND ENVIRONMENTAL IMPACT ASSESSMENT
REPORT

3. Contact Person and correspondence address

a) Details of

(i) Details of the EAP

In term of NEMA – EIA Regulations No. 326 of 7 April 2017 – Reg. 21, Appendix 3 – 1. (1)(a)(i)

Name of the Practitioner: DERA Environmental Consultants (Pty) Ltd.

Mr. Daan Erasmus

Tel No.: 018-468 5355

Fax No. : 018-468 4015

E-mail address: daane@dera.co.za

(ii) Expertise of the EAP.

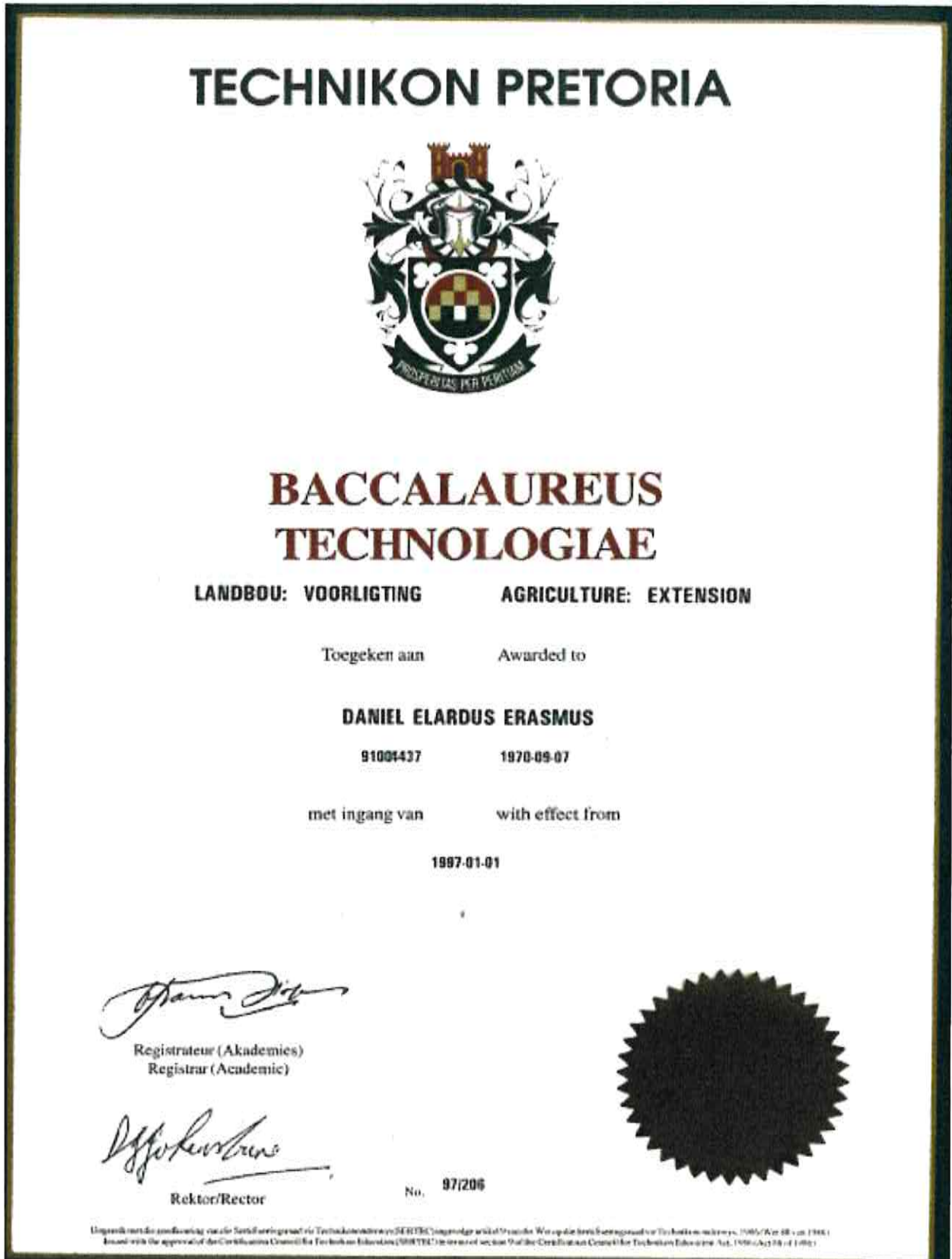
(1) The qualifications of the EAP

(with evidence).

In term of NEMA – EIA Regulations No. 326 of 7 April 2017 – Reg. 21, Appendix 3 – 1. (1)(a)(ii)

See next page for copy of qualification, Figure 1.

Figure 1 – Copy of Qualification



TECHNIKON
PRETORIA



TECHNIKON
PRETORIA

NASIONALE NATIONAL DIPLOMA

LANDBOU: HULPBRONBENUTTING

AGRICULTURE: RESOURCE UTILIZATION

Toegeken aan

Awarded to

DANIEL ELARDUS ERASMUS

91004437

7009075033088

met ingang van

with effect from

1994-01-01

Die volgende is voltooi

The following were completed

(Die onderwysing aan)

(The course taken)

Landbou-ekonomie I, II en III
 Voortplantingsmetodiek I en II
 Akkerbou I, II en III
 Weidingkunde A
 Bodembepaling I en II
 Bodembewaring I
 Grondkunde I en II
 *Meganisasie
 Fisiese Wetenskap
 Melkproduksietegnologie
 Vleisbeesproduksietegnologie
 Kleinveeproduksietegnologie
 Grondklassifikasie III

Agricultural Economics I, II and III
 Extension Method I and II
 Field Husbandry I, II and III
 Pasture Science A
 Land Use Planning I and II
 Soil Conservation I
 Soil Science I and II
 Mechanisation*
 Physical Science
 Milk Production Technology
 Beefer Production Technology
 Small Stock Production Technology
 Soil Classification III

Minimum Opleidingstydperk: 3 Jaar
Minimum Training Period : 3 Years


 SERTEC
 Uitvoerende Direkteur/
 Executive Director

Nr./No. ND1117/94

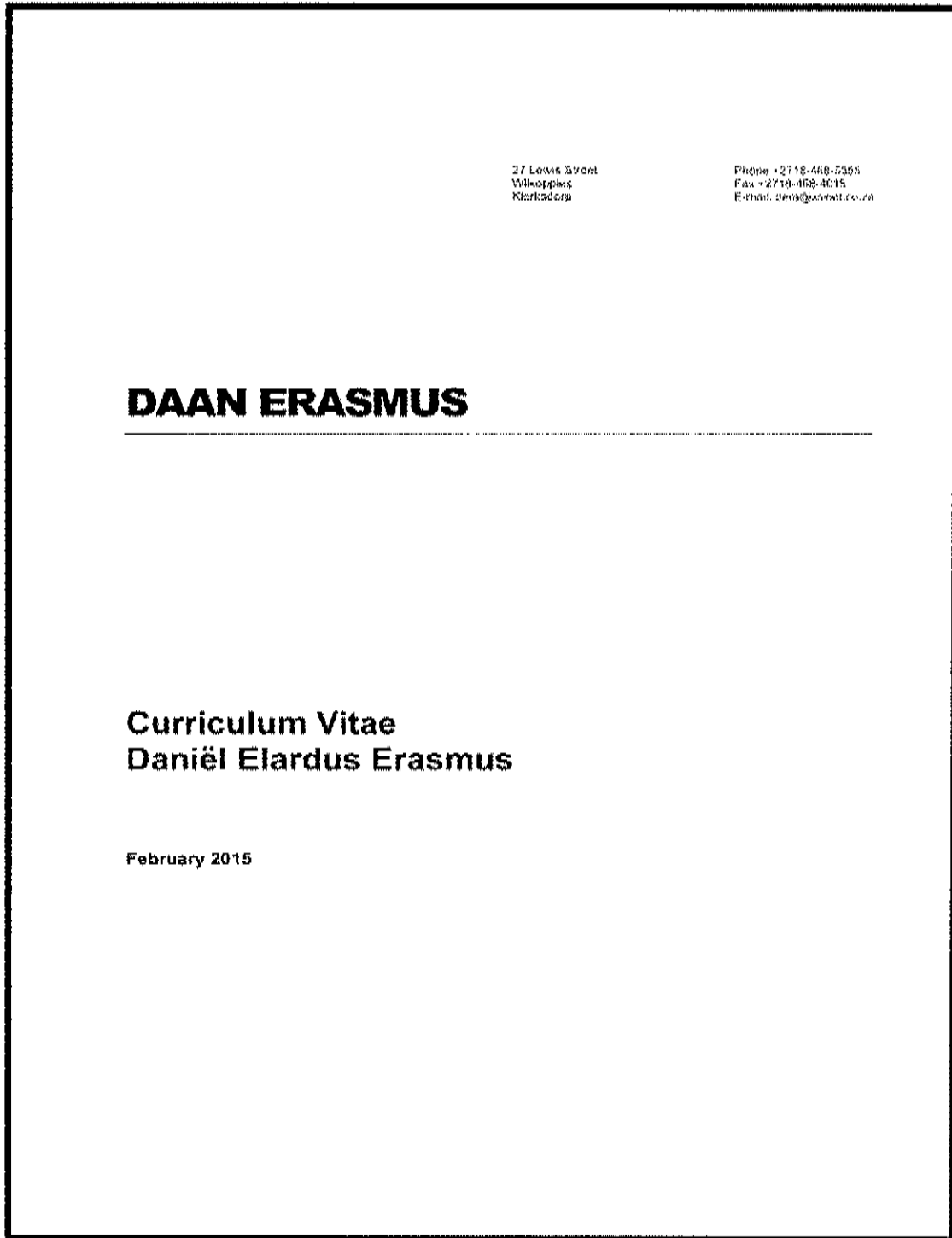

 TECHNIKON
 Rektor/Rector

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

(In carrying out the Environmental Impact Assessment Procedure)

See **Figure 2** below Curriculum Vitae of D. E. Erasmus.

Figure 2 – Copy of Curriculum Vitae



Personal Information

Name: Daniël Elardus Erasmus
 Date of Birth: 7 September 1970
 Place of Birth: Otlosdal, North West Province, South Africa
 Marital Status: Married with two children

Secondary & Post Secondary Education

1983-1988 Wolmaransstad High School, North West, SA
 Higher School Certificate – with Full Exemption

Subjects: English Afrikaans
 Mathematics Science
 Geography Accounting

1989-1990 Military Service, Potchefstroom, SA
 Artillery Division
Officers Course: II Lieutenant

1991-1994 Technikon Pretoria, Pretoria, SA
National Diploma
 Agriculture: Resource Utilization

Subjects: Agricultural Economics I, II and III
 Extension Method I, II and III
 Field Husbandry I, II and III
 Pasture Science A
 Land Use Planning I and II
 Soil Conservation I
 Soil Science I and II
 Mechanization
 Physical Science
 Milk Production Technology
 Beef Production Technology
 Small Stock Production Technology
 Soil Classification III
 Computer Application I

1996 Technikon Pretoria, Pretoria, SA
Baccalaureus Technologiae
 Agriculture: Extension

Subjects: Agricultural Communication I
 Agricultural Extension IV
 Crop Production IV
 Research Methodology

1998-1999 Orange Free State University, Bloemfontein, SA
 Completed all subjects as part of the **Masters Degree in Sustainable Agriculture**, but have not yet completed the script.

Subjects: Conservation of agricultural resources and the Environment
 Soil-, climate and water use and soil and water Management
 Plant and energy utilization and management
 Economics of sustainability and development
 Scrip – project proposal
 Sustainable plant production systems
 Farm management for sustainable agriculture
 Strategic management, marketing and planning
 Communication and technology transfer

Courses Computer training Dbase IV
 Seminar in public speaking
 Veld assessment course
 Resource Identification and utilization course
 ArcView GIS course
 Persuasion Skills course
 Wetlands identification course
 Rehabilitation of Wetlands course
 Management skills course
 Agricultural Law course

Professional Experience

1991-2002 Commenced professional career as resource conservation inspector at the National Department of Agriculture – Directorate: Land Resource Management in 1991. The main activities was veld inspecting in order to monitor correct utilization of natural resources and where necessary take steps according to Act. Day to day activities included discussions and lectures at farmers unions; municipalities and other institutions in order to promulgate the Act. During 1998, I was appointed as Chief Resource Conservation Inspector, with duties being: manage the administration of Act 43 of 1983,

Agricultural Resource Conservation Act in the North West Province of SA; management of personnel and personnel related matters; management of budget of regional office in Potchefstroom; monitoring mine rehabilitation and environmental management out of agricultural point of view; management and control of declared weeds and invader species.

2003-Present Began own company – DERA Environmental Consultants. Main scope of business: Compiling and submission of mining related applications; Manage and compile legal environmental documents. Further doing monitoring work to evaluated compliance to environmental legislation; evaluating outstanding rehabilitation liabilities for mining companies.
 Assist legal companies in determining environmental damage. Do assessment for closure applications. Give guidance in rehabilitation practices. Compile applications and basic assessment reports for chicken broilers and feed lots based on experience form management of the natural resources and the mitigation of impacts.

b) Location of the overall Activity.

Farm Name:	Sploenkop 174 HO ✓ Portion 6.																																																																	
Application area (Ha)	332,2402 ha																																																																	
Magisterial district:	<i>Wolmaransstad</i> , situated within the <i>Maquass Hills Local Municipality</i> of the North West Province of South Africa. Further within district of the <i>Dr Kenneth Kaunda District Municipality</i> .																																																																	
Distance and direction from nearest town	Approximately 43.4 km west of Wolmaransstad																																																																	
21 digit Surveyor General Code for each farm portion	T0HO00000000017400006																																																																	
Coordinates of the application area	Co-ordinates List WG 27° <table border="1"> <thead> <tr> <th colspan="3">CO-ORDINATE LIST</th> <th colspan="2">WG 25°</th> </tr> <tr> <th>NAME</th> <th>Y</th> <th>X</th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>A</td> <td>-63167.80</td> <td>3004583.47</td> <td></td> <td></td> </tr> <tr> <td>B</td> <td>-64376.98</td> <td>3003987.01</td> <td></td> <td></td> </tr> <tr> <td>C</td> <td>-65209.11</td> <td>3006434.18</td> <td></td> <td></td> </tr> <tr> <td>D</td> <td>-63882.18</td> <td>3006825.77</td> <td></td> <td></td> </tr> <tr> <td>A</td> <td>-63167.80</td> <td>3004583.47</td> <td></td> <td></td> </tr> <tr> <th>NAME</th> <th>LAT</th> <th>LONG</th> <th></th> <th></th> </tr> <tr> <td>A</td> <td>-27.151553</td> <td>25.637268</td> <td></td> <td></td> </tr> <tr> <td>B</td> <td>-27.140115</td> <td>25.649429</td> <td></td> <td></td> </tr> <tr> <td>C</td> <td>-27.168159</td> <td>25.657959</td> <td></td> <td></td> </tr> <tr> <td>D</td> <td>-27.171766</td> <td>25.644389</td> <td></td> <td></td> </tr> <tr> <td>A</td> <td>-27.151553</td> <td>25.637268</td> <td></td> <td></td> </tr> </tbody> </table>	CO-ORDINATE LIST			WG 25°		NAME	Y	X			A	-63167.80	3004583.47			B	-64376.98	3003987.01			C	-65209.11	3006434.18			D	-63882.18	3006825.77			A	-63167.80	3004583.47			NAME	LAT	LONG			A	-27.151553	25.637268			B	-27.140115	25.649429			C	-27.168159	25.657959			D	-27.171766	25.644389			A	-27.151553	25.637268		
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Minerals applied for	Alluvial Diamonds & Diamonds in Kimberlite																																																																	

c) Locality map

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

See Appendix 1(a) for Locality Map

Appendix 1(a) – Locality Map

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

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

Appendix 1(b) – Infrastructure and Activity Map

(i) Listed and specified activities

In term of NEMA – EIA Regulations No. 326 of 7 April 2017 – Reg. 21, Appendix 3 – 1. (1)(c)

Figure 3 – Google Earth Images



The area is characterized as being mainly cultivated field with two small fallout grazing area. The existing infrastructure over the application area is entrance- and farm roads, Eskom power lines, fences and a farm stead with associated buildings and workers houses. See **Appendix 1(b)** for an indication of the proposed main listed activities and existing/proposed infrastructure and **Figure 3** – Google Earth Images for more detail of what the side looks like pre-prospecting. Access to the farm is gained via an existing gravel roads turning off from the Wolmaransstad/Schweizer-Reneke tar road R 504. Almost the total application area is under cultivated fields. Only a small portion of the land will be impacted upon at any given time and land use on the rest of the area can proceed normally. The prospecting focus area will be clearly demarcated. The area applied for is over the entire portions.

Table 1: Listed Activities

NAME OF ACTIVITY (All activities including activities 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, beams, roads, pipelines, power lines, conveyors, etc., etc., etc.)	Aerial extent of the Activity (Hs or m ²)	LISTED ACTIVITY Mark with an "X" where applicable or affected.	APPLICABLE LISTING NOTICE (GNR544, GNR 545 or GNR546)/NOT LISTED
Listing 1 – Activity 20: 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), including— (a) associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource[.]; or (including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)) (b) <u>the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing, but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in Listing Notice 2 applies.</u>	332 ha	X	327
Listing 1 – Activity 27: The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	1.5 ha	X	327
Listing 2 – Activity 19: The removal and disposal of minerals contemplated in terms of section 20 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including— (a) associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource (.); or (b) (including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)) <u>the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing;</u> <u>but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in this Notice applies.</u>	1.5 ha	X	325
Plant area where washings pans and stockpiles will be			
Stockpiles of topsoil next to the open excavation			
Roads within the prospecting area			
Ablution facilities, chemical and flush toilets			

(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)

Table 2: Environmental attributes

ITEM	DESCRIPTION
Environmental attributes. Describe how the Environmental attributes associated with the development footprint will be determined.	The site will be visited and a proper foot survey will be conducted. The activities that will be conducted by the applicant will be discussed on site as described in the Prospecting Works Programme. The environmental setting on site and surrounding with the experience of the EAP will give an idea and lead to environmental attributes.
Identification of impacts and risks. Describe the process that will be used to identify impacts and risks.	The activities that will take place according to the Prospecting Works Programme will be discussed in detail with the applicant on site. With the specific environmental setting in mind and more specifically, the type of soil, soil depth, land use, vegetation type, and distances to open water and structures, the EAP will be able to identify potential impact areas where significant impacts might occur and the risks thereof. The methods of rehabilitation that need to be done, in order to meet the objective of the final land use will also be taken in consideration.

<p>Consideration of alternatives. Describe how alternatives, and in particular the alternatives to the proposed site layout and possible alternative methods or technology to be applied will be determined.</p>	<p>The prospecting will be done in 3 phases namely: Phase 1- Geological surveys Phase 2 - Test pits Phase 3- Bulk sampling through trenching. The site will be visited before the EMP/EIA is compiled. The different site alternatives will be discussed with the applicant on site. The entire application area will be visited and areas that might be environmentally sensitive will be identified. The proposed impacts and mitigations will also be discussed.</p>
<p>Process to assess and rank impacts. Describe the process to be undertaken to identify, assess and rank the impacts and risks each individual activity.</p>	<p>The site will be visited before the EMP/EIA is compiled. The different site alternatives will be discussed with the applicant on site. The entire application area will be visited and areas that might be environmentally sensitive will be identified. The proposed impacts and mitigations will also be discussed. The EAP (with 20 years' experience in prospecting and mining activities) will assess the specific site for possible impacts. The assessment of impacts will be done according to a synthesis of the following assessment criteria: - Nature of the impact - Extent (spatial scale) - Duration - Magnitude or intensity of the impact (severity) - Probability The criteria that will be used to determine significance as described below. Nature of the impact: This is an appraisal of the type of effect the activity would have on the affected environment. The description includes how and what is being affected, whether it is positive or negative, as well as whether it is direct or indirect.</p>
<p>Contribution of specialist reports. Describe how specialist reports, if required, will be taken into consideration and inform the impact identification, assessment and remediation process.</p>	<p>No specialist reports required at this stage, unless specifically requested.</p>
<p>Determination of impact management objectives and outcomes. Describe how impact management objectives will be determined for each activity to address the potential impact at source, and how the impact management outcomes will be aligned with standards.</p>	<p>The Nature of the impact: This is an appraisal of the type of effect the activity would have on the affected environment. The description includes how and what is being affected, whether it is positive or negative, as well as whether it is direct or indirect. Each impact will be assessed and quantified, and management objectives according to the first two steps, will be set. The management of the objective will aligned with the significance of the impact, as well as to ensure a positive outcome. The outcomes will be aligned with standards on environmental management and rehabilitation of prospecting areas according to Department Mineral Resources.</p>

A. DESCRIPTION OF PLANNED NON-INVASIVE ACTIVITIES:

(These activities do not disturb the land where prospecting will take place e.g. aerial photography, desktop studies, aeromagnetic surveys, etc)

Activities	Description of phases	Associated structures and infrastructures
Phases 1	Geological desktop studies and surveys in order to try and identify the gravel run. Various geological maps and instruments will used to identify if alluvial gravel deposits might be present on the application area. 6 Months needed for phase 1.	No surface disturbance, No infrastructure.

B. DESCRIPTION OF PLANNED INVASIVE ACTIVITIES:

(These activities result in land disturbances e.g. sampling, drilling, bulk sampling, etc)

TECHNICAL DETAIL REGARDING THE PROSPECTING METHODS

Table 3: Description of Activities to be followed

Activities	Description of phases	Associated structures and infrastructures
Phase 2	In Phase 2 test pits will be made (3 m x 2 m x ± 3.m deep), on a grid of 100 x 100meters and where necessary on a 50 x 50 meters grid where the gravel outcrops. This test pits are made with a 30 ton excavator, to determine if any diamond bearing gravel does occur. These test pits will be closed up immediately before the excavator move on to the next one. It is envisaged that 80 test pits will be made over the application area. 6 Months are needed for Phase 2.	No infrastructure. The topsoil and grass will be cleaned on the small area of 2m x 2m where the test pit will be excavated. After evaluation of the gravel the test pit will be closed.
Phase 3	In order to determine if the gravel does have diamonds the gravel needs to be taken out and tested, by putting it through the washing process. Trenching will be used to open the gravel in order to get a representative sample for testing. The trenches will be 10 x 60 x ± 3 m (deep). In one trench ± 1600m ³ (2880ton) gravel will be exposed and tested with 1 x 14 feet washing pan at a rate of 6m ³ (10 ton) a hour. The total prospecting area is 332 hectares, thus it is anticipated that a total of 20 000m ³ (36 000ton) will be tested by making trenches on different locations over the whole prospecting area, where the possibility of diamond bearing gravel were identified with the test pits. Taken at an 8 hour working day, 5 days a week and 20 days a month, the applicant will be able to process 1280m ³ a month. The processing of 20 000m ³ and test pits will take about 36 months for Phase 3.	There will be a plant area with mobile offices and ablation facilities and roads to the excavations.

Table 4: Technical data detailing the prospecting method

Phase	Activity (what are the activities that are planned to achieve optimal prospecting)	Skill(s) required (refer to the competent personnel that will be employed to achieve the required results)	Timeframe (in months) for the activity)	Outcome (What is the expected deliverable, e.g. Geological report, analytical results, feasibility study, etc.)	Timeframe for outcome (deadline for the extracted outcome to be delivered)	What technical expert will sign off on the outcome? (e.g. geological, mining engineer, surveyor, economist, etc)
1	Geological surveys	Geologist	6	Mapping	From month 1 - 6	The geologist
2	Test pits	Excavator operator & Manager(applicant)	6	Areas where alluvial diamond gravel is found will be identified	From month 7 - 12	Experienced applicant
3	Bulk Sampling	Excavator operator; Frond end loader operator; Washing pan operators & Manager	36	Diamonds found from bulk sample will be evaluated in terms of carats/100ton and value in \$/carat. Samples for the Manganese will be taken and analysed at a lab for confirmation of the % value.	From month 12 - 48	Experienced applicant

e) Policy and Legislative Context

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED
<small>In 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 instruments and instruments that are applicable to this activity and are to be considered in the assessment process.</small>	
National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA)	Activity 21, listing 1
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 has been triggered by applications in terms of the Minerals and Petroleum Resources Development Act, 2002 (As mentioned).	Activity 21, Listing 2
National Environmental Management Act, 1998 (Act 107 of 1998);	Regulation 21
Environmental impact Assessment Regulations, 2014 (G38282 – R982-985)	
EA Authorization and EMEMP. Submit documents that will describe the impacts and sustainable mitigation thereof.	
Compliance to Act and Regulations during course of activities. Show impacts and mitigation thereof	
National Water Act, 1998 (Act 36 of 1998)	Section 21 (a)
Application for Water abstraction for prospecting use	
Conservation of Agricultural Resources Act No 43 of 1983	Section 29
Compliance to Act and Regulations during course of activities. Stabilization of soil will rarely be sustainable with no erosion. Eradication of declared weeds	
National Heritages Resources Act, 1999 (Act 25 of 1999)	Section 36
Compliance to Act and Regulations during course of activities. Ensure that no graves or heritage etc will be disturbed	

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 applicant believes that the applied area has prospects for Alluvial Diamonds & Diamonds in Kimberlite as applied for. The desirability of this project can be motivated as the application area is not within or nearby an sensitive environmental areas and the impact that will be caused by the activity can be properly mitigated and rehabilitated. This area within Wolmaransstad district is historically well known to diamond mining which make it also more desirable. The possible employee positions that could emerge during phase 3 could also be a great opportunity for revenue generation in this area. The locality of the activities is over the entire farm portion. The specific activities as listed will be on certain portion over the application area. The geological surveys of phase 1 will determine the specific location for the test pits of phase 2. Where gravel is found with the test pits of phase 2 is where the bulk sampling of phase 3 and washing/sampling will take place. The duration of the activities will be 4 years.

g) Motivation for the preferred development footprint within the approved site including a full description of the process followed to reach the proposed development footprint within the approved site.

NOTE: 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.

The application area shows potential for the applied minerals thus these specific areas need to be prospected. It is envisaged that the disturbance will be over the cultivated fields and natural veld area. The area is characterized as being mainly cultivated field with two small fallout grazing area. The existing infrastructure over the application area is entrance- and farm roads, Eskom power lines, fences and a farm stead with associated buildings and workers houses. See **Appendix 1(b)** for an indication of the proposed main listed activities and existing/proposed infrastructure and **Figure 3** – Google Earth Images for more detail of what the side looks like pre-prospecting. Access to the farm is gained via an existing gravel roads turning off from the Wolmaransstad/Schweizer-Reneke tar road R 504. Only a small portion of the land will be impacted upon at any given time and land use on the rest of the surrounding area can proceed normally. The area will be bulk sampled and rehabilitated. The prospecting focus area will be clearly

demarcated. The area applied for is over the entire portions but the main prospecting focus area will be over natural veld.

i. Details of the development footprint alternatives considered.

With reference to the site plan provided as Appendix 1 and the location of the individual activities on site, provide details of the alternatives considered with respect to:

Since it is a rural area and the local grow and development in this area is very slowly. Prospecting operation like this contributes a lot to local economic growth and work opportunities in such a rural area. As can be seen on **Figure 3**, the current land use is mainly cultivated field with two small fallout grazing area. The option to explore the possibility for prospecting is an alternative land use. The applicant, **PG van Zyl (JNR) CC** are not interested in any other alternative land use over this land aside for the exploration of the said minerals, or any other activity, or method use other than prospecting in the conventional way, which is the most cost effective.

- (a) the property on which or location where it is proposed to undertake the activity
There are no alternative for the property as the application is for this area only.
- (b) the type of activity to be undertaken
The type of activity is in line with the submitted Prospecting Programme.
- (c) the design or layout of the activity
The layout of the activity will and can only be on the application area as per sketch plan. The footprint of the actual disturbance on site does have the alternative where the puddle can be deposited onto a puddle dam or back into the excavations whereby the latter will have a smaller footprint.
- (d) the technology to be used in the activity
The technology used in the activity will as described in the Prospecting Programme and the best options will be determined by the applicant. The footprint of the actual disturbance on site does have the alternative where the puddle can be deposited onto a puddle dam or back into the excavations whereby the latter will have a smaller footprint. The puddle dam method however can lead to quicker rehabilitation and re-use of the land for grazing as the excavations are backfilled with dry material and immediately rehabilitated.
- (e) the operational aspects of the activity, and
The operational aspect is only the prospecting for Alluvial Dimonds & Diamonds in Kimberlite, on this specific area.
- (f) the option of not implementing the activity
This option might only be possible if the applicant decide to abandon the project.

ii) Details of the Public Participation Process Followed

Describe the process undertaken to consult interested and affected parties including public meetings and one on 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 process as described by NEMA for Environmental Authorization was followed. See **Table 5, 6 & 7** below for the identification of Interested and Affected Parties to be consulted with. The landowners (**Mr. J. P. Badenhorst**) and neighbours will be consulted personally and through written letter that are given to them by hand. A site notice will be placed at the entrance to the application area. With this site notice all passers-by are requested to submit any written comments to be forwarded to the consultant (still awaiting response). A notice was also published in the Stellalander Newspaper of 6th March 2019, response is awaited. A public meeting was held on the 8th March 2019 at Maquassi Hills Municipal Offices. See proof of consultation already done under **Appendix 2**. The Public Participation process is still on going and the documents will be updated as more feedback is received back. The Scoping Report was send to all relevant State Departments for evaluation. No comments were received.

Appendix 2 – Proof of consultation.

Table 5: Description of process to be undertaken to consult interested and affected parties

IDENTIFICATION CRITERIA	Mark with an X where applicable	
	YES	NO
Will the landowner be specifically consulted?	X	
Will the lawful occupier on the property other than the Landowner be consulted?	X	
Will a tribal authority or host community that may be affected be consulted?		X
Will recipients of land claims in respect of the area be consulted?	X	

Will the landowners or lawful occupiers of neighboring properties been identified?	X	
Will the local municipality be consulted?	X	
Will the Authority responsible for power lines within 100 meters of the area be consulted?		X
Will Authorities responsible for public roads or railway lines within 100 meters of the area applied for be		X
Will authorities responsible for any other infrastructure within 100 meters of the area applied for be consulted? (Specify)		X
Will the Provincial Department responsible for the environment be consulted?	X	
Will all of the parties identified above be provided with a description of the proposed mining /mining operation as referred above?	X	
Will all the parties identified above be requested in writing to provide information as to how their interests (whether it be socio-economic, cultural, heritage or environmental) will be affected by the proposed prospecting project?	X	
Other, Specify		

Table 6: Details of the engagement process to be followed.

<p>Steps to be taken to notify interested and affected parties (Describe the process to be undertaken to consult interested and affected parties including public meetings and one on one consultation. NB the affected parties must be specifically consulted regardless of whether or not they attended public meetings. Photographs of notice and copies of advertisements and notices notifying potentially interested and affected parties of the proposed application are attached as Appendix 2).</p>	<p>PROVIDE DESCRIPTION HERE The applicant did receive the consent of the landowner. The neighbors was informed personally and consulted by the applicant and confirmed in the writing. A consultation letter was sent to the Local Municipality. An advertisement was placed in the local newspaper for comments and a public meeting was held.</p>
<p>Information to be provided to Interested and Affected Parties.</p>	<p>Compulsory</p> <ul style="list-style-type: none"> • The site plan. • List of activities to be authorized • Scale and extent of activities to be authorized • Typical impacts of activities to be authorized (e.g. surface disturbance, dust, noise, drainage, fly rock etc.) • The duration of the activity. • 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) <p>Other, specify: a prospecting works programme</p>
<p>Information to be required from Interested and Affected Parties.</p>	<p>Compulsory</p> <ul style="list-style-type: none"> • To provide information on how they consider that the proposed activities will impact on them or their socio-economic conditions • To provide written responses stating their suggestions to mitigate the anticipated impacts of each activity • To provide information on current land uses and their location within the area under consideration • To provide information on the location of environmental features on site to make proposals as to how and to what standard the impacts on site can be remedied, requested to make written proposals • To mitigate the potential impacts on their socio economic conditions to make proposals as to how the potential impacts on their infrastructure can be managed, avoided or remedied). <p>Other, Specify</p>

iii) Summary of issues raised by I & AP's

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

Table 7: Summary of I & AP's consultation

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 sent and/or Comments Received	Issues raised	EAP's response to the applicant
AFFECTED PARTIES			
Landowner/s	X		
Mr. J.P. Badenhorst (Landowner of the farm Spioenkop 174 HO) P.O. Box 222, Wolmaransstad, 2630 Tel: 0838563050; E-mail: manpielbadenhorst@gmail.com	4 Mar 2019	No objection. See signed consultation letter attached.	
Lawful occupiers of the land			
Mr. B.M.P. Van Niekerk (Neighbour on the farm Diamantdoorns) P.O. Box 136, Schweizer-Reneke, 2780 Tel: 082 775 2004; E-mail: madervanniekerk55@gmail.com	4 Mar 2019	No objection. Supports the project. See signed consultation letter attached.	
Mr. T.L. Jordaan (Neighbour) P.O. Box 275, Schweizer-Reneke, 2780 Tel: 083 656 2330; E-mail: mashandi@nwel.co.za	4 Mar 2019	No objection. Supports the project. See signed consultation letter attached.	
Municipal councillor	X		
Municipality	X		
Marquass Hills Local Municipality LED officer: Peter Bolao Tel: 018 586 1555 Cell: 083 204 0322 e-mail: bokoppeter@gmail.com	26 Feb 2019	Consultation letter via e-mail to Mr. Bolao	
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA.			
Eskom			
Communities			
Dept. Land Affairs	X		
KeatbesweMothupi, Office of the Regional Land Claims Commissioner, N W Province, Private Bag X08, Mmabatho, 2735; Fax: 018 388 9641 Mr. John Mafoko Tel: 018-388 7170; E-mail: John.Mafoko@dtrlr.gov.za	25 Feb 2019	E-mail sent Acknowledgement received	
Traditional Leaders			
N/A			
Dept. Rural, Environment and Agricultural Development	X		
Guma Skosana Agricentre Building, Car James Moroka & Stadium Road, Mmabatho, 2735 E-mail: gskosana@mrdd.gov.za	6 May 2019	EMP/EIA was sent with Fastway couriers for comments	No comments received
Dept. Water and Sanitation	X		

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Dr. T. Ntuli 2 nd Floor, Bloem Plaza Building, Om East Burger & Charlotte Maxeke, Bloemfontein, 9300 Tel: 015 405 9000; E-mail: NtuliT@dhrs.gov.za	X	6 May 2019	EMP/EIA was sent with Fastway couriers for comments	No comments received
Dept. Agriculture, Forestry and Fisheries Maurice Veyega Louis de Geange Building, Cnr Peter Mckaba & Wolmarans street, 3 rd Floor, Office nr 318, Potchefstroom, 2520 Tel: 018 285 0306; E-mail: MauriceV@daff.gov.za		6 May 2019	EMP/EIA was sent with Fastway couriers for comments	No comments received
Dept. Rural Development and Landform				
Other Competent Authorities				
OTHER AFFECTED PARTIES				
INTERESTED PARTIES				

Notice published in the Stellalander Newspaper of 6th March 2018 and again on the 15th May 2019.

iv) The Environmental attributes associated with the alternatives.

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

(1) Baseline Environment**(a) Type of environment affected by the proposed activity.**

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

Description of the baseline environment

The purpose of this section is to provide information on the environment in which the proposed prospecting activities will take place, with a view to identify sensitive issues/areas, which need to be considered when conducting the impact assessment. The application is over the: *Spioenkop 174 HO (Portion 6)*. This area consists of 100% cultivated fields.

Magisterial District:

Wolmaransstad, situated within the Maquassi Hills Local Municipality of the North West Province of South Africa. Further within district of the Dr Kenneth Kaunda District Municipality.

Direction from neighbouring town:

The driving direction and distance are: 30 min (43.4 km) via R504 from SAPS Wolmaransstad - 36 Piet Retief Street, Wolmaransstad, 2630. Head southwest on Piet Retief Street toward Kruger Street (R504) for 120 m. Turn right at the 1st cross street onto Kruger Street (R504). Continue to follow R504 for 39.2 km. Turn left, the proposed application area will be on the left after 4.2 km -27.151553, 25.637268.

Longitude (approximate center of prospecting site):

25.637268 E

Latitude (approximate center of prospecting site):

-27.151553 S

Existing Surface Infrastructure:

The area is characterized as being mainly cultivated field with three small fallout areas under natural grazing. The existing infrastructure over the application area is entrance- and farm roads, Eskom power lines, fences and a farm stead with associated buildings and workers houses. See **Appendix 1(b)** for an indication of the proposed main listed activities and existing/proposed infrastructure and **Figure 3** – Google Earth Images for more detail of what the site looks like pre-prospecting. Access to the farm is gained via an existing gravel roads turning off from the Wolmaransstad/Schweizer-Reneke tar road R 504.

According to VEGMAP (2006) the area falls within the **[SVcb 11] Mountain Bushveld**. VT 61 Bankenveld (62%) (Acocks 1953). LR 39 Moist Cool Highveld Grassland (45%), LR 34 Rocky Highveld Grassland (37%) (Low & Rebelo 1996).

Distribution: North-West and Northern Cape Provinces: In the Molopo area from Bray and Werda in the north on the border with Botswana, southwards through Morokweng and Tosca in the east and Vorstershoop to McCarthysrus and Eldorado in the west to Bendell in the south. Altitude 1 000-1 300 m.

Vegetation [Flora] and Landscape Features:

Open woodland to a closed shrubland with the trees *Acacia erioloba* and *Boscia albitrunca* and shrubs *Lycium cinereum*, *L. hirsutum* and *Rhigozum trichotomum*. Grass layer is well developed in parts of the northeast, but usually fairly open.

Climate:

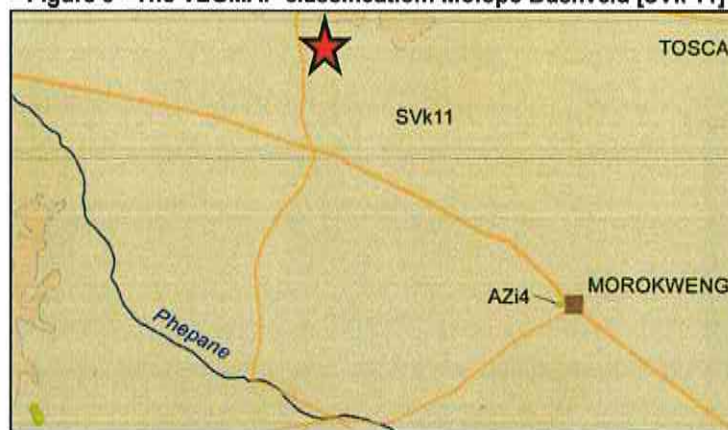
Summer and autumn rainfall with very dry winters. MAP about 250-400 mm. Frost frequent in winter.

Geology & Soil:

Red aeolian sand of Recent age with surface calcrete and silcrete. Soils are deep (>1.2 m) and sandy (Hutton and Clovelly soil forms). Land types mainly Ah with a little Fc.

Important Taxa - Tall Tree: *Acacia erioloba* (d). **Small Trees:** *Boscia albitrunca* (d), *Terminalia sericea* (d), *Acacia mellifera* subsp. *detinens*. **Tall Shrubs:** *Lycium hirsutum* (d), *Rhigozum trichotomum* (d), *Grewia flava*, *Lycium villosum*, *Rhus burchellii*. **Low Shrubs:** *Acacia hebeclada* subsp. *hebeclada*, *Aptosimum albomarginatum*, *A. marlothii*, *Eriocephalus ericoides*, *Monechma divaricatum*, *M. incanum*. **Geoxylic Suffrutex:** *Elephantorrhiza elephantina*. **Herbaceous Climber:** *Momordica balsamina*. **Graminoids:** *Aristida meridionalis* (d), *A. stipitata* subsp. *spicata* (d), *Cenchrus ciliaris* (d), *Eragrostis lehmanniana* (d), *Aristida congesta*, *Eragrostis biflora*, *E. pallens*, *E. rigidior*, *Pogonarthria squarrosa*, *Schmidtia kalahariensis*, *S. pappophoroides*, *Stipagrostis ciliate*, *S. uniplumis*. **Herbs:** *Acanthosicyos naudinianus*, *Acrotome angustifolia*, *A. inflata*, *Dicoma schinzii*, *Geigeria ornativa*, *Helichrysum cerastioides*, *Hermannia tomentosa*, *Hermbstaedtia fleckii*, *H. linearis*, *Limeum arenicolum*, *L. fenestratum*, *L. viscosum*, *Lotononis platycarpa*, *Senna italica* subsp. *arachoides*, *Sericorema remotiflora*, *Tephrosia purpurea* subsp. *leptostachya*, *Tribulus terrestris*. **Biogeographically Important Taxa:** (Kalahari endemics) **Small Tree:** *Acacia luederitzii* var. *luederitzii*. **Tall Shrub:** *Acacia haematoxylon*. **Graminoids:** *Anthephora argentea*, *Megaloprotachne albescens*, *Panicum kalaharensis*. **Conservation:** Least threatened. Target 16%. Only 1% statu-torily conserved in the Molopo Nature Reserve. More than 1% already transformed. In the Morokweng, Konke and Ewbank regions, intense utilisation has led to encroachment of *Geigeria ornativa*, *Tribulus terrestris* and *Acacia mellifera*, while much *A. erioloba* has been destroyed by fire-wood collection. Erosion is very low. **Remark:** An extensive unit with increasing diversity of savanna plant species towards the north and northeast. Reference Smit (2000).

Figure 5 - The VEGMAP classification: Molopo Bushveld [SVk 11]



Animal Life [Fauna]:

Small animals common in this area are: Steenbuck, Duiker, Jackal and Meer cats and several game spp on the game farm area.

Topography:

The mine site is situated on a terrain that is characterized by Open woodland to a closed shrub land. The slope varies around <0.1% to not more than 3%.

Surface Water:

This site falls in Lower Vaal water management area [10] as classified by the Department of Water Affairs, under tertiary drainage region C31 and quaternary catchment C31E. There seem to be various dry pans over the application area but all of the above however only seems to have standing water during the rainfall season or during high rainfall periods. River diversion is not applicable

Ground Water:

There are boreholes on the application area used for stock watering by the landowner. The applicant intends to use water from these current boreholes. The water uses will be 100m³ a day for the primary processing in the bulk sampling phase.

Air Quality:

The impact on air quality will only start with the creation of test pits and trenches (Phase 3) where dust from excavating and from the roads will occur. This impact will be low and will be monitored and mitigated trough wetting of the roads.

Noise:

The impact of noise will only start with the test pits and trenches where noise from the equipment will be generated. This operation will only be in day time working hours and will have a low impact on current surroundings.

Sites of Archaeological and Cultural Interest:

No graveyards. According to Section 36(3) of the National Heritage Resources Act 25 of 1999 no person may, without a permit issued by SAHRA or a provincial heritage resources authority—

- (a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
- (b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
- (c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.

It is recommended that the graveyard is included in the overall management plan of the mine development. Preservation of the site will require that the area is properly demarcated with at least a 20m buffer zone placed around the graveyard in order to avoid potential damage during prospecting activities. It will be necessary to ensure that the graveyard is accessible to the relatives of the deceased. There are no major archaeological grounds to halt the proposed development. However, the potential occurrence of unmarked graves or subsurface finds not recorded during this survey can never be excluded, so it is advised that SAHRA and a qualified archaeologist are informed immediately if archaeological objects are uncovered.

Sensitive Landscapes:

There are no sensitive areas that were identified on the application area.

Visual Aspects:

These prospecting activities will be visible to all passersby on the gravel road that form the western boundary of the application area.

Social:

The proposed activity will employ 8 people, of which a few are resident around the operation. Various social amenities are available close to the operation. These include schools, hospitals churches, recreation facilities as well as a Police Station at Wolmaransstad, which is located approximate 43.4 km east of the proposed operation.

(b) Description of the current land uses.

The current land use is cultivated fields. The majority of the application area is used cultivation; however the natural grasslands and biodiversity have been affected and altered by agricultural activities and historical mining activities.

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

The area is characterized as being mainly cultivated fields and small fallout grazing areas. The existing infrastructure over the application area is entrance- and farm roads, Eskom power lines, fences and a farm stead with associated buildings and workers houses. See **Appendix 1(b)** for an indication of the proposed main listed activities and existing/proposed infrastructure and **Figure 3 – Google Earth Images** for more detail of what the site looks like pre-prospecting. Access to the farm is gained via an existing gravel roads turning off from the Wolmaransstad/Schweizer-Reneke tar road R 504.

Table 8: Environmental features and infrastructure on the site

Mining Phase	Environmental features and infrastructure on site
Phase 1 – Geological surveys	No environmental features of infrastructure will be impacted or affected during this phase, as it entails only desktop or foot surveys.
Phase 2 – Test pits: Will entail that test pits will be made with an excavator on a grid basis over area on the application area. A pit will be excavated of 3 m x 2 m x 3 m; gravel will be inspected and replaced with the excavator.	<p>Environmental features that can be affected is:</p> <ul style="list-style-type: none"> ✓ Geology – can be affected minimal as gravel will only be excavated to a depth of 3 m and will be backfilled. ✓ Natural Vegetation - will be stripped and placed on the side of the pits, will be replaced again after the pit is filled up again. ✓ Soil – soil structure will be destroyed and excavator operator must try and separate the different soil layers and replace it again in the same reversed manner as it was taken out. ✓ Infrastructure – all mining activities will be kept 100 m horizontally away from any surface infrastructure, unless special permission was received from M&HS and structure owner to work nearer.
Phase 3 – Trenching: Will entail the excavation of trenches of 10 m x 60 m ±3 m. Take out of gravel recourse, stockpiling it and putting the gravel through a washing plant for testing.	<p>Environmental features that can be affected is:</p> <ul style="list-style-type: none"> ✓ Geology - will be affected as gravel will be excavated to a depth of 3 m, stockpiled and tested through a washing plant. This will totally destroy the geological structure of the areas that is excavated. After testing the oversize will be backfilled to ground level and the topsoil cover will be replaced again. ✓ Natural Vegetation - will be stripped and placed on the side of the trenches. This seed bank can be preserved for up to 12 months where after it must be replaced again. After the gravel was taken out and oversize backfilled again this topsoil layer will be replaced again which can again generate a vegetation cover again. ✓ Soil – soil structure will be destroyed and excavator operator must try and separate the different soil layers and replace it again in the same reversed manner as it was taken out. ✓ Animal life – will be scared away from the affected area to neighbouring unaffected areas. Habitats will be destroyed and animals could be killed by the movement of heavy machinery. These animals will return again to the rehabilitated areas after all mining activities have ceased. ✓ Surface water – all mining activities must be kept 100 m horizontally away from the banks of any stream area, unless special permission has been received for Department of Water and Sanitation. ✓ Ground water – The necessary water registration/licenses must be obtained for Department of Water and Sanitation prior to the commencement of Phase 3. Water must be used in a responsible manner and as much as possible water recirculation must be done. <p>Infrastructure – all mining activities will be kept 100 m horizontally away from any surface infrastructure (buildings, roads, structures), unless special permission was received from M&HS and structure owner to work nearer.</p>

(d) Environmental and current land use map.

(Show all environmental and current land use features)

Current land use of the application area consists of cultivated fields. The landowner uses the area for cultivation. See **Appendix 1(b)** [Infrastructure Map] for more detail.

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 proposed project is anticipated to impact on a range of biophysical and socio-economic aspects of the environment. The main purpose of the EMP/EIA is to identify and evaluate the significance of these potential impacts and determine how they can be minimized or mitigated.

It should be noted that a comprehensive Environmental Management Program (EMPr) will be developed and implemented to regulate and minimize the direct, indirect and cumulative impacts during the construction and operational phases. The potential environmental impacts identified during the Scoping Phase, which will be investigated further in the Impact Assessment Phase of the project are summarized in **Table 9** on the next page.

Table 9: Impact significance identification matrix for Spioenkop 174 HO

PHASE	Components	ABIOTIC										BIOTIC			K	L	M	N
		A	B	C	D	E	F	F	E	F	G	H	I	J				
	Impacts	Geology	Topography	Soil	Land capability	Land use	Surface water	Ground water	Air quality	Noise	Vegetation	Wildlife	Sensitive landscapes	Visual impact	Archaeological & cultural sites	Socio-economic	Affected parties	
Construction	1 Activity, Product or Service																	
	2 Construction of rest houses area.			L	M	L					M			M				
	3 Establishment (i.e. preparation, vegetation clearance, fence removal and replanting) of proper access roads (topside existing road), site workshop & storage area (temporary containers), removal of processing plant (concrete, mobile screen and 1 x 14 feet washing pans, conveyor, etc.), final vegetation clearance, impact survey & stockpiling next to first opencast/abandon within the mine lease area.	M	M	H	H	H			M	H	H	H	L				L	M
	4 Establishment of bonded diesel and oil/chemical storage facilities, chemical tanks	M	M	M	H		M											
	5 Provision of storage tanks for potable (drinking water) and process water (acid suppression).	H	H	H	H	H	L		M	M	H	H	M		L			
Operational	6 Provision of waste handling (bonded) facilities (domestic & industrial waste bins).																	
	7 Fencing-off active prospecting area as required in terms of the MSA. Erecting access control gates, etc.				M							M						H+
	8 Vegetation clearance, topsoil removal & re-vegetation to opencast/abandon within the mine lease area (0.5ha of surface area disturbed by open cast).	M	M	H	H	M	L		L	L	H	L		L		M		H
	9 Mechanically excavating overburden with an excavator and stockpile separately from topsoil dump. Remove grass with excavator and stockpile on side of bench/soil load area bins.	H	M+	H	H	H	L		M	L	H	L		L+		M		H
	10 Transport and trucks to remove processing plant (conveyor, screens, 2 x 54 feet washing pans) for processing and sorting of concentrate at site/depot.																	
Operational	11 The wet waste sludge coming out of the pans will be pumped to open excavators & stored there, from where excess water is recycled. Backfilling of excavators (as part of containment/neutralisation) the coarse gravel (rough) situated from the pans will be transported back by road and loaded towards the opencast/abandon.	M	H	H	H	H	H		L	L	H					M		H
	12 Final backfills of all waste (concentrate and sludge) of weathered sludge (waste material) on the rest of tail (waste).	M+	M+	M+	M+	M+	M+		M+	L	L					M+		H±
	13 Completion of bonded sites.																	
14 Reflow and spread of topsoil evenly over bonded sites.																		

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PHASE	A	B	C	D	ABIOTIC				BIOTIC				K	L	M	N	
					Geology	Topography	Soil	Land capability	Land use	Surface water	Ground water	Air quality					Noise
14																	
15																	
16																	

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

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

I. Introduction:

Table 10 describes and evaluates the effects of the different prospecting projects and the associated activities on the natural and social environments. The different environmental components, on which the project (can/may) have an impact, are:

- | | |
|--------------------|---------------------------------------|
| 1. Geology | 10. Air Quality |
| 2. Topography | 11. Noise |
| 3. Soil | 12. Archaeological and Cultural sites |
| 4. Land Capability | 13. Sensitive Landscapes |
| 5. Land Use | 14. Visual Aspects |
| 6. Vegetation | 15. Socio-economic Structure |
| 7. Wildlife | 16. Interested and Affected Parties |
| 8. Surface Water | |
| 9. Ground Water | |

MPACT ASSESSMENT

Before the impact assessment could be done the different project activities were identified:

ACTIVITIES:

1. Access Roads (Existing farm roads to be upgraded)
2. Temporary office, workshops, ablution facility, water tanks, diesel tanks and other temporary buildings
3. Prospecting equipment (conveyor, drum screen, washing pans, generator)
4. Stockpiles
5. Overburden dumps
6. Opencast trenches (as part of bulk sampling)
7. Tailings dam (porrel dam)

II. Environmental Impact Assessment Summary:

- **Environment likely to be affected by the prospecting operation. (See Appendix 1(a) for location)**

Environmental aspect	Affected		Not affected
	Negligible	Substantial	
1. GEOLOGY		X	
2. TOPOGRAPHY	X		
3. SOIL		X	
4. LAND CAPABILITY		X	
5. LAND USE	X		
6. VEGETATION		X	
7. WILDLIFE	X		
8. SURFACE WATER			X
9. GROUND WATER	X		
10. AIR QUALITY	X		
11. NOISE	X		
12. SENSITIVE LANDSCAPES			X
13. VISUAL ASPECTS	X		
14. SOCIO ECONOMICS	X		
15. INTERESTED & AFFECTED PARTIES	X		
16. ARCHAEOLOGICAL			X

- **Environment likely to be affected by the alternative land use**

Prospecting will be a new land use over this area. The site that is earmarked for prospecting represents ± 1 % of the total area applied for. And it is further not foreseen that prospecting activities would disturbed an area of not more than 0.5 ha at any given time. The rest of the terrain would continue to be used for agriculture purposes by the landowner.

• **Assessment of the impacts created by the prospecting activity**

Before any assessment can be made the following evaluation criteria need to be described:

Explanation of probability of impact occurrence

Probability of impact occurrence	Explanation of probability
Very low	<20% sure of particular fact or likelihood of impact occurring.
Low	20 to 39% sure of particular fact or likelihood of impact occurring.
Moderate	40 to 59% sure of particular fact or likelihood of impact occurring.
High	60 to 79% sure of particular fact or likelihood of impact occurring.
Very high	80 to 99% sure of particular fact or likelihood of impact occurring.
Definite	100% sure of particular fact or likelihood of impact occurring.

Explanation of extent of impact

Extend of impact	Explanation of extend
Site specific	Direct and indirect impacts limited to site of impact only.
Local	Direct and indirect impacts affecting environmental elements within the Wolmarstad area.
Regional	Direct and indirect impacts affecting environmental elements within North-west Province.
National	Direct and indirect impacts affecting environmental elements on a national level.
Global	Direct and indirect impacts affecting environmental elements on a global level.

Explanation of duration of impact

Duration of impact	Explanation of duration
Very short	Less than 1 year
Short	1 to 5 years
Medium	6 to 12 years
Long	13 to 50 years
Very long	Longer than 50 years
Permanent	Permanent

Explanation of impact significance

Impact significance	Explanation of significance
No impact	There would be no impact at all - not even a very low impact on the system or any of its parts.
Very low	Impact would be negligible. In the case of negative impacts, almost no mitigation and/or remedial activity would be needed, and any minor steps, which might be needed, would be easy, cheap and simple. In the case of positive impacts, alternative means would almost all likely to be better, in one or a number of ways, than this means of achieving the benefit.
Low	Impact would be of a low order and with little real effect. In the case of negative impacts, mitigation and/or remedial activity would be either easily achieved or little would be required, or both. In case of positive impacts, alternative means for achieving this benefit would likely be easier, cheaper, more effective, less time-consuming, or some combination of these.
Moderate significance	Impact would be real but not substantial within the bounds of those which could occur. In the case of negative impacts, mitigation and/or remedial activity would be both feasible and fairly easily possible. In the case of positive impacts, other means of achieving these benefits would be about equal in time, cost and effort.
High significance	Impacts of a substantial order. In the case of negative impacts, mitigation and/or remedial activity would be feasible but difficult, expensive, time-consuming or some combination of these. In the case of positive impacts, other means of achieving this benefit would be feasible, but these would be more difficult, expensive, time-consuming or some combination of these.
Very high significance	Of the highest order possible within the bounds of impacts which could occur. In the case of negative impacts, there would be no possible mitigation and/or remedial activity to offset the impact at the spatial or time scale for which it was predicted. In the case of positive impacts, there is no real alternative to achieving the benefit.

Table 10: Describes and evaluates the effects of the different prospecting projects and the associated activities

ASPECT	IMPACTS				CUMULATIVE IMPACTS
1. GEOLOGY					
Nature of the impact	Geology (alluvial deposits will be destroyed during the opencast prospecting operation. During operation which will be for the next 4 years, the mineral resource (Diamonds Alluvial & Diamonds in Kimberlite) will be extracted from alluvial deposits. Waste rock material/overburden material is disposed off/backfilled in existing excavations as part of the prospecting process.				
Extent	Site				Activity causing the impact
Duration	Permanent				An opencast prospecting method will be used to extract bulk samples. Therefore the original geology will be totally destroyed.
Probability	Definite				
Significance	High				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

ASPECT	IMPACTS	CUMULATIVE IMPACTS								
2. TOPOGRAPHY										
Nature of the impact	<p>* Change in landform : * The prospecting site is situated on: level plains some relief.</p> <p>* Disturbance of the surface drainage: The prospecting of the Diamonds Alluvial & Diamonds in Kimberlite deposits will result in the creation of trenches (10 x 60 x ±3 m or less), that act as depressions in the environment that captures run-off. Prospecting activities will be concentrated as indicated on Appendix 1(b) on the application area (approximately 3 m depth). The surface drainage is already disturbed. Normal surface drainage will be disturbed at a given point. Run-off if any will be diverted away from the specific site.</p>									
Extent	Site	Activity causing the impact								
Duration	Very long to Permanent	Bulk sampling trough trenches, etc.								
Probability	Definite									
Significance	High									
Phase responsible for the impact	<table border="1"> <thead> <tr> <th>Phase 1</th> <th>Phase 2</th> <th>Phase 3</th> <th>Closure</th> </tr> </thead> <tbody> <tr> <td></td> <td>X</td> <td>X</td> <td>X</td> </tr> </tbody> </table>	Phase 1	Phase 2	Phase 3	Closure		X	X	X	
Phase 1	Phase 2	Phase 3	Closure							
	X	X	X							

ASPECT	IMPACTS	CUMULATIVE IMPACTS								
3. SOIL										
Nature of the impact	The surface area is characterized by various soil depths. Any construction of infrastructure should be preceded by the removal of all available topsoil.									
Extent	Site	Activity causing the impact								
Duration	Long	In the process of removing topsoil the soil layers are mixed and the structure may be disturbed.								
Probability	High									
Significance	Moderate									
Phase responsible for the impact	<table border="1"> <thead> <tr> <th>Phase 1</th> <th>Phase 2</th> <th>Phase 3</th> <th>Closure</th> </tr> </thead> <tbody> <tr> <td></td> <td>X</td> <td>X</td> <td></td> </tr> </tbody> </table>	Phase 1	Phase 2	Phase 3	Closure		X	X		
Phase 1	Phase 2	Phase 3	Closure							
	X	X								

ASPECT	IMPACTS	CUMULATIVE IMPACTS								
3. SOIL										
Nature of the impact	The establishment, construction, operation and eventually rehabilitation (demolition) of listed structures such as the access roads, stockpiles /tailings dumps, cause compaction of soil. All prospecting activities will be concentrated on the identified prospecting focus area where Diamonds Alluvial & Diamonds in Kimberlite deposits could be found. In the same time a certain surface area is therefore alienated. The active prospecting surface area (alienated) would be restricted within the ±0.5 ha at any given time (in relation to area of application of the prospecting right of 332) for the next 4 years.									
Extent	Site	Activity causing the impact								
Duration	Long	Site preparation for additional prospecting sites and the construction, operation of listed infrastructure.								
Probability	High									
Significance	Moderate									
Phase responsible for the impact	<table border="1"> <thead> <tr> <th>Phase 1</th> <th>Phase 2</th> <th>Phase 3</th> <th>Closure</th> </tr> </thead> <tbody> <tr> <td></td> <td>X</td> <td>X</td> <td>X</td> </tr> </tbody> </table>	Phase 1	Phase 2	Phase 3	Closure		X	X	X	
Phase 1	Phase 2	Phase 3	Closure							
	X	X	X							

ASPECT	IMPACTS	CUMULATIVE IMPACTS								
3. SOIL										
Nature of the impact	Soil erosion: Due to the fact that certain surface areas would become compacted and this would lead to lesser infiltration of rainwater and more run-off that could cause erosion on bare disturbed surfaces. Erosion would always be possible until such time a vegetation cover is provided during rehabilitation phase.									
Extent	Site	Activity causing the impact								
Duration	Very short	When removing topsoil during site preparation, little storm water control structures are in place. If a severe storm hits the area, it may lead to erosion on site.								
Probability	Very low	Topsoli stockpiles may be prone to erosion due to lack of vegetation cover.								
Significance	Low	Water control structures may fail or severe rainstorms may cause excessive run-off.								
Phase responsible for the impact	<table border="1"> <thead> <tr> <th>Phase 1</th> <th>Phase 2</th> <th>Phase 3</th> <th>Closure</th> </tr> </thead> <tbody> <tr> <td></td> <td>X</td> <td>X</td> <td>X</td> </tr> </tbody> </table>	Phase 1	Phase 2	Phase 3	Closure		X	X	X	Surface compaction due to activities taking place.
Phase 1	Phase 2	Phase 3	Closure							
	X	X	X							

EIAr/EMPr – PG van Zyl (Jnr) – SPIOENKOP 174 HO – NW30/5/1/1/2/12555 PR

ASPECT	IMPACTS	CUMULATIVE IMPACTS		
3. SOIL				
Nature of the impact	Potential of soil contamination.	None.		
Extent	Site	Activity causing the impact		
Duration	Long	Vehicle/equipment breakages and oil/lubricant /diesel spills may contaminate soil.		
Probability	Moderate			
Significance	Moderate			
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure
		X	X	X

ASPECT	IMPACTS	CUMULATIVE IMPACTS		
3. SOIL				
Nature of the impact	Loss of soil structure	None		
Extent	Site	Activity causing the impact		
Duration	Long	In the process of removing topsoil the soil layers are mixed and the structure may be disturbed.		
Probability	High			
Significance	Moderate			
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure
		X	X	

ASPECT	IMPACTS	CUMULATIVE IMPACTS		
3. SOIL				
Nature of the impact	Loss of soil fertility	None		
Extent	Site	Activity causing the impact		
Duration	Short	The mixing of soil during site preparation, compaction and potential pollution (spillage of oil etc.) all may cause this situation.		
Probability	Definite			
Significance	Low			
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure
		X	X	

ASPECT	IMPACTS	CUMULATIVE IMPACTS		
4. LAND CAPABILITY				
Nature of the impact	Temporary loss of land capability to support grazing. The small area (0.5 ha) where the active prospecting activities occur (trenches, tailings dumps, stock piles, prospecting equipment) etc. will thus be temporarily alienated, until the area is rehabilitated. All trenches would be rehabilitated as part of the prospecting process during which trenches are back-filled. If the old areas be re-worked this will make more land available for grazing. The rest of the application area will still be used by the landowner as agricultural land.			
Extent	Site	Activity causing the impact		
Duration	Long	Site preparation for additional prospecting sites and the construction, operation of listed infrastructure, the land capability of the active prospecting area will be totally destroyed.		
Probability	Definite			
Significance	Moderate			
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure
		X	X	X

ASPECT	IMPACTS	CUMULATIVE IMPACTS		
5. LAND USE				
Nature of the impact	This is a new prospecting operation and therefore will lose its land use to support grazing on a certain portion of the 332 ha during the next 4 years. If the old areas be re-worked this will make more land available for grazing. Only a small portions of land (0.5 ha at a time) would be affected by the prospecting operation relation to the total prospecting right application area of 332 ha. All trenches would be rehabilitated as part of the prospecting process during which excavations are back-filled			
Extent	Site	Activity causing the impact		
Duration	Long to permanent	Site preparation for prospecting and the construction, operation of listed infrastructure		
Probability	Definite			
Significance	Moderate			
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure
		X	X	

EIAr/EMPr – PG van Zyl (Jnr) – SPIOENKOP 174 HO – NW30/5/1/1/2/12555 PR

ASPECT	IMPACTS	CUMULATIVE IMPACTS
6.VEGETATION		
Nature of the impact	Vegetation clearance, disturbance and trampling. Destruction of habitats for vegetation. Due to a disturbed ecosystem, bare ground and spreading of exotics can follow.	
Extent	Site	Activity causing the impact
Duration	Long	The site preparation for new sites, construction of listed infrastructure will cause destruction of habitats for vegetation. Due to a disturbed ecosystem, bare ground and invasion of exotics could further spread. The vegetation needs to be cleared to remove the topsoil.
Probability	Definite	
Significance	High	
Phase responsible for the impact	Phase 1 Phase 2 Phase 3 Closure	
		X X

ASPECT	IMPACTS	CUMULATIVE IMPACTS
6.VEGETATION		
Nature of the impact	Habitat change, loss of species, spread of alien and invasive species.	
Extent	Site	Activity causing the impact
Duration	Permanent	The change in the current habitat will be mitigated during final rehabilitation.
Probability	High	
Significance	Moderate	
Phase responsible for the impact	Phase 1 Phase 2 Phase 3 Closure	
		X X

ASPECT	IMPACTS	CUMULATIVE IMPACTS
6.VEGETATION		
Nature of the impact	Dust coverage of plants.	None
Extent	Site	Activity causing the impact
Duration	Long	Heavy trucks and other vehicles on dirt roads, stockpiling, dumping of tailings are mainly responsible for this impact.
Probability	High	
Significance	Low	
Phase responsible for the impact	Phase 1 Phase 2 Phase 3 Closure	
		X X

ASPECT	IMPACTS	CUMULATIVE IMPACTS
7. WILDLIFE		
Nature of the impact	Wildlife or wildlife habitat destruction /change / disturbance.	None
Extent	Site	Activity causing the impact
Duration	Permanent	The flora which normally serves as habitat for animals would be destroyed during site preparation. The increase in activity will temporarily scare other animals. The area will serve as a new habitat after rehabilitation.
Probability	Very High	
Significance	Moderate	
Phase responsible for the impact	Phase 1 Phase 2 Phase 3 Closure	
		X X

ASPECT	IMPACTS	CUMULATIVE IMPACTS
7. WILDLIFE		
Nature of the impact	Injury and death to wildlife.	None
Extent	Site	Activity causing the impact
Duration	Short	The movement of vehicles may kill certain insects, rodents and possible birds. Most of the remaining animal life will however move away due to noise.
Probability	Very low	
Significance	Low	
Phase responsible for the impact	Phase 1 Phase 2 Phase 3 Closure	
		X X

ASPECT	IMPACTS	CUMULATIVE IMPACTS
7. WILDLIFE		
Nature of the impact	Restoration of habitat.	None
Extent	Site	Activity causing the impact
Duration	Short	As rehabilitation progresses the habitat of certain species will be restored/created (Closure objective) Animals will probably only move back when human movement is limited.
Probability	Low	
Significance	Low	
Phase responsible for the impact	Phase 1 Phase 2 Phase 3 Closure	
		X X X

EIAr/EMPr – PG van Zyl (Jnr) – SPIOENKOP 174 HD – NW30/5/1/1/2/12555 PR

ASPECT	IMPACTS	CUMULATIVE IMPACTS							
8. SURFACE WATER									
Nature of the impact	Increased silt load. Clearing topsoil for footprint areas can increase infiltration rates of water to the groundwater system and decrease buffering capacity of soils to absorb contaminants from spills on surface. This can increase the risk of contamination of the groundwater system (increases aquifer vulnerability).								
Extent	Local	Activity causing the impact							
Duration	Short	The clearance of vegetation and the traffic on access roads will all contribute to an increase in the silt load on the prospecting area.							
Probability	Moderate								
Significance	Moderate								
Phase responsible for the impact	<table border="1"> <tr> <td>Phase 1</td> <td>Phase 2</td> <td>Phase 3</td> <td>Closure</td> </tr> <tr> <td></td> <td>X</td> <td>X</td> <td>X</td> </tr> </table>		Phase 1	Phase 2	Phase 3	Closure		X	X
Phase 1	Phase 2	Phase 3	Closure						
	X	X	X						

ASPECT	IMPACTS	CUMULATIVE IMPACTS							
8. SURFACE WATER									
Nature of the impact	Change in surface water quality. Spillages from vehicles and also surface water run-off that is not adequately diverted away from the active prospecting excavations could end-up in the excavations creating problems regarding water quality and hindering the prospecting process. Surface run-off from active prospecting sites (overburden dumps & tailings dam/dump) if not adequately contained on site could end-up in the adjacent undisturbed natural veld. If the natural surface run-off is not adequately diverted in the case of the dry-water course area, prospecting sections it could become silted-up.								
Extent	Local	Activity causing the impact							
Duration	Short	"Dirty / Clean" water systems at facilities like the overburden dumps, roads, trenches, etc. may impact on the quality of the surface water. The water should be contained in the surface runoff control measures provided therefore.							
Probability	Moderate								
Significance	High								
Phase responsible for the impact	<table border="1"> <tr> <td>Phase 1</td> <td>Phase 2</td> <td>Phase 3</td> <td>Closure</td> </tr> <tr> <td></td> <td>X</td> <td>X</td> <td></td> </tr> </table>		Phase 1	Phase 2	Phase 3	Closure		X	X
Phase 1	Phase 2	Phase 3	Closure						
	X	X							

ASPECT	IMPACTS	CUMULATIVE IMPACTS							
8. SURFACE WATER									
Nature of the impact	Change in surface water quantity: Water management area (10): Lower Vaal water management area The mine falls under the primary drainage region C31 and in quaternary sub-catchment C31E. Notwithstanding the above-mentioned facts, it is not expected that prospecting operations will have any effect on the boundaries or the general water flow of the catchment. Standing water in trenches could as the result of rain/ surface run-off ending up in shallow depressions.								
Extent	Site	Activity causing the impact							
Duration	Long	It is an operational objective to contain or divert all surface run-offs from the active prospecting trenches area mainly due to pollution (sediment) potential. This will reduce the run-off quantity, although small in comparison with the drainage area in total.							
Probability	High								
Significance	High								
Phase responsible for the impact	<table border="1"> <tr> <td>Phase 1</td> <td>Phase 2</td> <td>Phase 3</td> <td>Closure</td> </tr> <tr> <td></td> <td>X</td> <td>X</td> <td></td> </tr> </table>		Phase 1	Phase 2	Phase 3	Closure		X	X
Phase 1	Phase 2	Phase 3	Closure						
	X	X							

ASPECT	IMPACTS	CUMULATIVE IMPACTS							
9. GROUND WATER									
Nature of the impact	Reduction of groundwater quality Prospecting activities are not likely to impact on local ground-water quality. No chemicals area used during the prospecting process. Handling of waste and transport of building material can cause various types of spills (domestic waste, pit latrines, hydrocarbons) which can infiltrate and contaminate of the groundwater system.								
Extent	Site	Activity causing the impact							
Duration	Long								
Probability	Definite								
Significance	High								
Phase responsible for the impact	<table border="1"> <tr> <td>Phase 1</td> <td>Phase 2</td> <td>Phase 3</td> <td>Closure</td> </tr> <tr> <td></td> <td>X</td> <td>X</td> <td>X</td> </tr> </table>		Phase 1	Phase 2	Phase 3	Closure		X	X
Phase 1	Phase 2	Phase 3	Closure						
	X	X	X						

9. GROUND WATER				
Nature of the impact	Even though abstraction is likely to have a minimal effect on the surrounding groundwater users, this is a new use, and groundwater levels are expected to continue current trends. Groundwater will be abstracted for potable water supply and prospecting processes. The volume of water needed is small (10 000 Lit/hr) in comparison to other water use and will have a small impact on the surrounding aquifer.			
Extent	Site			Activity causing the impact
Duration	Long			Opencast prospecting operation.
Probability	Low			
Significance	High			
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure
		X	X	X

ASPECT	IMPACTS				CUMULATIVE IMPACTS
10. AIR QUALITY					
Nature of the impact	Dust will be generated during the prospecting operation (loading with an excavator on to a dump truck) and transportation to the plant (conveyor, drum screen & washing pans) and on gravel/dirt/farm roads. The processing of the gravel is a wet process and therefore minimum dust is generated.				
Extent	Site			Activity causing the impact	
Duration	Long			Initial construction work with regard to infrastructure (roads) that involves earth moving equipment. During the phase 2, dust could be generated as indicated during prospecting.	
Probability	Moderate				
Significance	Moderate				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X	X	

ASPECT	IMPACTS				CUMULATIVE IMPACTS
11. NOISE POLLUTION					
Nature of the impact	Noise will be generated during the prospecting operation (loading with an excavator on to a dump truck) and transportation to the plant (conveyor, drum screen & washing pans). The mine itself is located in rural landscape. The impact would be of more importance regarding the direct worker environment that should adhere to the requirements in terms of the Mine Health and Safety Act.				
Extent	Local			Activity causing the impact	
Duration	Long			Earth moving equipment and vehicles (trucks).	
Probability	Definite				
Significance	Moderate				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X	X	

ASPECT	IMPACTS				CUMULATIVE IMPACTS
12. ARCHAEOLOGICAL AND CULTURAL SITES					
Nature of the impact	The terrain is not archaeologically vulnerable. It is unlikely that the proposed development will result in any significant archaeological impact at the site.				
Extent	Site			Activity causing the impact	
Duration	Permanent				
Probability	Definite				
Significance	High				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X			

ASPECT	IMPACTS				CUMULATIVE IMPACTS
13. SENSITIVE LANDSCAPE					
Nature of the impact	No sensitive landscapes identified.				
Extent	Not applicable			Activity causing the impact	
Duration	Not applicable				
Probability	Not applicable				
Significance	Not applicable				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	

ASPECT	IMPACTS	CUMULATIVE IMPACTS							
14. VISUAL ASPECTS									
Nature of the impact	Prospecting will only be visible to the neighbours living there. The operation is not visible to from any tourist road.								
Extent	Site	Activity causing the impact							
Duration	Long	Diamond prospecting operation.							
Probability	Definite								
Significance	Low								
Phase responsible for the impact	<table border="1"> <tr> <td>Phase 1</td> <td>Phase 2</td> <td>Phase 3</td> <td>Closure</td> </tr> <tr> <td></td> <td>X</td> <td>X</td> <td>X</td> </tr> </table>		Phase 1	Phase 2	Phase 3	Closure		X	X
Phase 1	Phase 2	Phase 3	Closure						
	X	X	X						

ASPECT	IMPACTS	CUMULATIVE IMPACTS							
15. SOCIO ECONOMICS									
Nature of the impact	Increase in Socio – economic activity at local level. The project in itself would ensure that approximately 4 workers would be assured of a job for some time. Job creation plays a major role in increasing the economic wellbeing of employees and their dependants in the Wolmaransstad district. Once all prospecting operations have ceased it would definitely have a negative impact.	The increase in socio-economic activity will add to the current growth and development in Wolmaransstad already created by industry and prospecting.							
Extent	Local	Activity causing the impact							
Duration	Long	Additional employment opportunities created.							
Probability	Definite								
Significance	High								
Phase responsible for the impact	<table border="1"> <tr> <td>Phase 1</td> <td>Phase 2</td> <td>Phase 3</td> <td>Closure</td> </tr> <tr> <td></td> <td>X</td> <td>X</td> <td>X</td> </tr> </table>		Phase 1	Phase 2	Phase 3	Closure		X	X
Phase 1	Phase 2	Phase 3	Closure						
	X	X	X						

ASPECT	IMPACTS	CUMULATIVE IMPACTS							
15. SOCIO ECONOMICS									
Nature of the impact	The main impact on the landowners is visual impact and the small area of 0.7 ha that will not be available for agricultural activities at any given time for 4 years. The applicant is not the landowner, and was consulted personally.	The economic benefits in terms of investment and the delivery of services in the North-west province will get an additional benefit from the project.							
Extent	Regional	Activity causing the impact							
Duration	Very Long								
Probability	High								
Significance	Moderate								
Phase responsible for the impact	<table border="1"> <tr> <td>Phase 1</td> <td>Phase 2</td> <td>Phase 3</td> <td>Closure</td> </tr> <tr> <td></td> <td>X</td> <td>X</td> <td>X</td> </tr> </table>		Phase 1	Phase 2	Phase 3	Closure		X	X
Phase 1	Phase 2	Phase 3	Closure						
	X	X	X						

ASPECT	IMPACTS	CUMULATIVE IMPACTS							
16. INTERESTED & AFFECTED PARTIES									
Nature of the impact	Impact of activities on I&AP's Temporary loss of utilization of the prospecting focus areas for agricultural purposes. The long-term benefits far out-weight the current benefits from the current use. Loss of cattle due to falling of animals in mine workings if not fenced. No negative impact is expected that could be appropriately mitigated, such as the eventual rehabilitation of the excavations.								
Extent	Local	Activity causing the impact							
Duration	Long								
Probability	High								
Significance	High								
Phase responsible for the impact	<table border="1"> <tr> <td>Phase 1</td> <td>Phase 2</td> <td>Phase 3</td> <td>Closure</td> </tr> <tr> <td></td> <td>X</td> <td>X</td> <td>X</td> </tr> </table>		Phase 1	Phase 2	Phase 3	Closure		X	X
Phase 1	Phase 2	Phase 3	Closure						
	X	X	X						

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)

In terms of the EIA regulations, consideration must be given to alternatives. Alternatives are different approaches and ways of meeting the need, purpose and objectives of a proposed activity. Alternatives may include a location site alternative, activity alternatives, processes or technology alternatives, temporal alternatives etc. the no-go alternative or option is also considered, as it provides the baseline against which the impacts or other alternatives may be compared.

There is not an alternative for the location as this is the specific area where the applicant believes minerals can be found. The only alternative will be whether what method of processing to be used, puddle into the pans (wet method) or puddle dam (dry tailings method).

The footprint of the actual disturbance on site does have the alternative where the puddle can be deposited onto a puddle dam or back into the excavations whereby the latter will have a smaller footprint. The puddle dam method however can lead to quicker rehabilitation and re-use of the land for grazing as the excavations are backfilled with dry material and immediately rehabilitated. The usage of a puddle dam (Dry method) can have a positive impact on the environment as the excavations can be rehabilitated and grassed on a concurrent immediate basis. The usage of wet method will have a smaller footprint but it will take longer to fully rehabilitate and go back to grazing.

On geographical the dry method, it will be a little bit more negative as there will be a sloped area of 2 - 3m high with closure. With wet method it will be flat. On heritage and cultural aspects there will be no effect of either of the methods. On biological the both the methods will be equal with very limited effects. On economical the dry tailings will have a bigger capital expense but as the rehabilitation can be finished quicker it will be financially better. On social aspect both these methods will have similar impacts as the same amount of workers will be used.

However, for this specific project, no alternatives have been investigated, with the exception of the no-go alternative. The reason for this being that the prospecting right is being applied for the sole purpose of prospecting for the said minerals as listed in the PWP. The no-go option entails the continuation of the current land use (natural grazing and agricultural activities) on the study site. The project will contribute towards providing continued jobs for current staff. Should the proposed project therefore not be authorized to proceed, it is anticipated that current employment opportunities will be terminated once the mineral reserves have been depleted. The no-go option is therefore not a feasible option in this case, as it suggests that the mineral reserves should not be exploited and current employment opportunities should not materialize or be prolonged.

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).

Refer to the results of consultation contained as **Appendix 2** for the issues that were raised by I&AP's and stakeholders during the review period of the Consultation phase, as well as the response to those issues made by the Environmental Assessment Practitioner.

The mitigation measures and technical management action plans which address potential impacts are discussed below.

Environmental Component	Geology
Environmental Management/Mitigation Measures/Action Plans/Commitments	
<ul style="list-style-type: none"> • No mitigation exists except to backfill the excavations with the rock waste material and fine tailings. • As prospecting progressed and the excavation has been back-filled, a certain amount of overburden material and topsoil would be placed on these areas. This will not restore the geology, but will mitigate the impact. • Planned, systematic and thorough prospecting of the mineral resource Diamonds Alluvial & Diamonds in Kimberlite should take place. • Optimal utilization of the mineral resource should take place within the boundaries of the prospecting terrain. • Strip, remove and store soil and overburden as far as practical in an orderly fashion and replace as far as possible on back-filled areas, in the reverse order once decision have been taken that no further prospecting would take place in a particular section or which might still be traversed by vehicles and disturbed in the process. Cognisance should be taken of the fact that bulk sampling would take place by means of an opencast prospecting method until such level is reach / cut-off point is reach where rehabilitation could begin. • Care must be taken that the removal of alluvial deposits by means of earthmoving equipment is restricted to what is really necessary to achieve the objective. 	
EMP Performance Assessment & Monitoring Reporting	
To be included in EMP/EIA.	
Closure Objective	
Optimal exploration of the mineral resource in order to ensure to facilitate better rehabilitation planning. The overburden and topsoil (where available) must be replaced in a responsible and planned manner in order to achieve some conformity with the surrounding undisturbed area.	

Environmental Component	Topography
Environmental Management/Mitigation Measures/Action Plans/Commitments	
<ul style="list-style-type: none"> • All trenches should be back-filled with waste tailings material and eventually overburden material, covered with a shallow layer of topsoil (if available). • Access to all active bulk sampling excavation areas should be controlled. The active bulk sampling area should be fenced off. The necessary warning signs should be put in place. All prospecting activities should be restricted to the fenced-off area. • Surface run-off control should be put in place at active trenches (preventing water from entering) and also rehabilitated tailings dumps and overburden dumps in order to prevent the loss of growth medium on top of the dumps. <p>Prospecting would be done according to a definite PWP (only disturbing an area that is really necessary). As part of the PWP the handling of tailings material, overburden material, construction of dumps and back-filling of trenches should also form part of it.</p> <p>Rehabilitation of the new topographical landscape in such a way that it would blend in with the surrounding landscape and allow normal surface drainage to continue. As soon as a section of the prospecting site would not be explored anymore it should be rehabilitated (planned and phased manner).</p>	
EMP Performance Assessment & Monitoring Reporting	
To be included in EMP/EIA.	
Closure Objective	
Rehabilitation of the new and old disturbances topographical landscape in such a way that it would blend in with the surrounding landscape and allow normal surface drainage to continue. Rehabilitation in such a way that the new landscape features would be stable and would not pose any safety hazard to human and animal anymore.	

Environmental Component	Soil (topsoil & access roads)
Environmental Management/Mitigation Measures/Action Plans/Commitments	
<p>Handling of topsoil as a natural resource: Any future expansion of the trenches or construction of infrastructure should be preceded by the removal of <u>all available topsoil</u>. The surface of any new areas to be disturbed must be kept to a minimum. <u>All available topsoil/overburden material should be removed and stockpiled for rehabilitation purposes.</u></p> <p>Access roads, etc: The clearing of soil surface areas would be restricted to what is really necessary for the construction of infrastructure. Wherever possible all topsoil should be removed and stockpiled for rehabilitation purposes. Overburden material should also be stockpiled separately if practically possible. Topsoil and overburden material should be transported to an area earmarked for rehabilitation.</p>	
EMP Performance Assessment & Monitoring Reporting	
To be included in EMP/EIA.	
Closure Objective	
The topsoil removed in the site preparation process should be replaced during the rehabilitation exercise.	

Environmental Component	Soil (soil compaction)
Environmental Management/Mitigation Measures/Action Plans/Commitments	
<p>Soil compaction: The prospecting operation should only be restricted to what is really required (demarcated area of exploitation) within the fenced-off area. Access roads towards the sites would be restricted only to the roads (existing farm roads & roads established in consultation with the surface owner). No land would be disturbed unnecessarily. Prospecting & rehabilitation should be done in a well-planned manner (according to a PWP) and in the process ensuring that activities are only restricted to surface areas really required. Compaction of soil surface areas would be alleviated once rehabilitation of certain area starts. Certain roads would probably remain for access (in consultation</p>	

with the surface owner). Those that would not be required would be ripped and rehabilitated.
EMP Performance Assessment & Monitoring Reporting
To be included in EMP/EIA.
Closure Objective
Alleviation of compaction of soils would be done during rehabilitation of the prospecting terrain, including roads.

Environmental Component	Soil (Soil erosion)
Environmental Management/Mitigation Measures/Action Plans/Commitments	
<p>Soil Erosion: To take preventative steps against land disturbance like erosion. Implement and maintain cut-off trenches/berms to prevent erosion. Re-vegetation of exposed soil surfaces (man-made surfaces on tailings dumps, overburden dumps, disturb surfaces in excavated sites, roads, etc) should happen as soon as a particular activity has ceased in order to act as a sufficient erosion prevention measure.</p>	
EMP Performance Assessment & Monitoring Reporting	
To be included in EMP/EIA.	
Closure Objective	
No soil erosion must be visible and no potential for soil erosion must be present at closure.	

Environmental Component	Soil (Soil contamination)
Environmental Management/Mitigation Measures/Action Plans/Commitments	
<p>Potential for soil contamination: Vehicles to be inspected to ensure no oil and hydraulic fluid leaks occur. All oil spills on soil to be removed and bio-remediate immediately (certain commercial products are available such as Terrasorb or it could be rehabilitated by means of the application of fertilizer and turn with a spade from time to time in order to enhance the natural occurring soil microbial activity). No servicing of vehicles must occur except on a concrete floor or over PVC lined area in an area allocated for that. Training w.r.t pollution hazards and their impact on the environment must be given as part of induction training. An incidence register for this purpose must be kept. Drip trays must be available and used where emergency repairs is done.</p>	
EMP Performance Assessment & Monitoring Reporting	
To be included in EMP/EIA.	
Closure Objective	
No soil contamination must be visible or known before closure can be given.	

Environmental Component	Soil (Soil structure)
Environmental Management/Mitigation Measures/Action Plans/Commitments	
<p>Change in Soil structure: Ensure that all available (if any) topsoil is carefully removed in different areas. The soil must also be compacted as backfilling is done. No unnecessary driving outside the active prospecting area is allowed due to soil compaction that may occur. Use organic material e.g. manure to restore the soil structure during rehabilitation. Ensure that the rehabilitation plan makes provision for ripping of roads and spreading of organic material and that this is used during rehabilitation.</p>	
EMP Performance Assessment & Monitoring Reporting	
To be included in EMP/EIA.	
Closure Objective	
No compaction of any roads or any other area must be present during closure. If the soil structure is disturbed mitigation measures e.g. the use of organic material, lime and fertilizers must be implemented to restore the soil structure.	

Environmental Component	Soil (Soil fertility)
Environmental Management/Mitigation Measures/Action Plans/Commitments	
<p>Soil fertility: Little can be done to preserve the moisture status of the soil once it is exposed. The soil must be used for rehabilitation as quickly as possible. The soil on the rehabilitated area must be analysed to determine the deficiencies and fertilizer and lime must be ploughed into the soil to restore its fertility, if necessary. Ensure that stockpiled soil is kept clean and where possible ensure that the topsoil is treated with organic material and fertilized. Do not use stockpiled soil for any other purpose but for rehabilitation. Do not use topsoil to construct roads. Ensure the rehabilitation plan makes provision for fertiliser. Make sure rehabilitated topsoil is analyzed in a laboratory. The type of fertilizer would depend on a soil analyses and fertilizer recommendation.</p>	

EMP Performance Assessment & Monitoring Reporting

To be included in EMP/EIA.

Closure Objective

The soil must be fertile enough to sustain vegetation.

Environmental Component

Land Capability

Environmental Management/Mitigation Measures/Action Plans/Commitments

The disturbance of land must be restricted (kept to a minimum) to the planned fenced-off, active prospecting site only. Remove topsoil where it is available. Take care that roads needed are restricted to one entry to the area for prospecting purposes. If new land is used for roads to enter the area it must be done in consultation with the surface owner. All rehabilitation will be done according to the final rehabilitation plans after approval by the Department of Mineral Resources (DMR). Topsoil will be placed in areas where it was removed and the areas will be re-vegetated accordingly. Ensure that the rehabilitation plan is implemented.

EMP Performance Assessment & Monitoring Reporting

To be included in EMP/EIA.

Closure Objective

Rehabilitated to the state that it is suitable for the predetermined and agreed land capability.

Environmental Component

Land Use

Environmental Management/Mitigation Measures/Action Plans/Commitments

The disturbance of land must be restricted (kept to a minimum) to the planned active, fenced-off prospecting site only. Remove topsoil where it is available. Take care that roads are the only areas used to enter the area for prospecting purposes. If new land is used for roads to enter the area it must be done in consultation with surface owner. All rehabilitation will be done according to the final rehabilitation plans after approval by the Department of Mineral Resources (DMR). Topsoil will be placed in areas where it was removed and the areas will be re-vegetated accordingly. Ensure that the rehabilitation plan is implemented.

EMP Performance Assessment & Monitoring Reporting

To be included in EMP/EIA.

Closure Objective

The opencast section requires the land to be totally disturbed. The replacement of tailings material, overburden and topsoil would ensure that the land is able to support some grazing.

Environmental Component

Vegetation

Environmental Management/Mitigation Measures/Action Plans/Commitments

No mitigation exists except to replace the vegetation by reseeded of grasses and natural growth. Prospecting should be done in a well-planned manner (according to a PWP) and in the process ensuring that activities are only restricted to surface areas really required.

EMP Performance Assessment & Monitoring Reporting

To be included in EMP/EIA.

Closure Objective

During rehabilitation indigenous vegetation cover comprising of local plant species should be established in order to ensure a well-adapted sustainable plant cover that would be able to prevent erosion of the replaced topsoil on the disturbed prospecting site exposed surfaces, tailings dumps, etc.).

Environmental Component

Vegetation

Environmental Management/Mitigation Measures/Action Plans/Commitments

Habitat change, loss of species, spread of alien and invasive species:
 No mitigation exists except to replace the vegetation by reseeded of grasses.
 Prospecting should be done in a well-planned manner (according to a PWP) and in the process ensuring that activities are only restricted to surface areas really required.
Develop and implement an invasive and alien control programme to control the spread of weeds and other invasive species.
 Eradicate exotic weeds and invader species if it invades the terrain. All illegal invader plants and weeds shall be eradicated as required in terms of Regulation 15 & 16 of the Act on Conservation of Agricultural Resources, 1983 (Act no. 43 of 1983) which list the plants.
 An invasive and alien control programme must be implemented by the mine.

EMP Performance Assessment & Monitoring Reporting

To be included in EMP/EIA.

Closure Objective

No invasive and alien species must be present after closure. A post-closure control program must also be implemented.

Environmental Component	Vegetation
Environmental Management/Mitigation Measures/Action Plans/Commitments	
Ensure that all roads on the prospecting site (utilized by prospecting vehicles) are daily sprayed with water to control dust. Site inspections to ensure the spraying are done.	
EMP Performance Assessment & Monitoring Reporting	
To be included in EMP/EIA.	
Closure Objective	
No excessive dust must be present during the normal growth season after closure.	

Environmental Component	Wildlife (habitat)
Environmental Management/Mitigation Measures/Action Plans/Commitments	
Wildlife or wildlife habitat destruction /change / disturbance : To take care that no new or unnecessary destruction of habitats, other than the demarcated prospecting site should take place. Restoration of habitat: Ensure the rehabilitation plan is implemented.	
EMP Performance Assessment & Monitoring Reporting	
To be included in EMP/EIA.	
Closure Objective	
The animal life habitat must be restored after decommissioning. Success will be measured against the extent to which the animals return to the area.	

Environmental Component	Wildlife (injury and death)
Environmental Management/Mitigation Measures/Action Plans/Commitments	
Injury and death to wildlife: Re-establish trees and grass cover as soon as possible during and after prospecting. Fence area off to ensure that no person can enter without permission. Ensure that the rehabilitation plan is compiled and executed. Keep incidence register on killings and disturbances.	
EMP Performance Assessment & Monitoring Reporting	
To be included in EMP/EIA.	
Closure Objective	
The animal life habitat must be restored after decommissioning. Success will be measured against the extent to which the animals return to the area.	

Environmental Component	Wildlife
Environmental Management/Mitigation Measures/Action Plans/Commitments	
Make game catching, traps, snares, poaching and any other unnecessary disturbance of animals a disciplinary offence. All staff must undergo basic environmental awareness lecture during induction training. Machine operators and drivers to undergo appropriate level of environmental impact training to ensure they understand their impact on the environment. Ensure all staff working on the opencast section undergo basic lecture during induction phase. Introduce the actions as listed above into disciplinary code as offence.	
EMP Performance Assessment & Monitoring Reporting	
To be included in EMP/EIA.	
Closure Objective	
The post-closure phase must be suitable for further restoration of the newly man-made animal habitat. The area must be stable and acceptable for the return of animal- and plant life.	

Environmental Component	Surface Water (quality)
Environmental Management/Mitigation Measures/Action Plans/Commitments	
Change in surface water quality: Storm water control measures must be implemented to divert clean water away from the active prospecting site and keep contaminated water contained. Water control structures must be well designed and constructed to ensure a minimum down wash of topsoil. Vegetation disturbance must be as little as possible. The PWP must be strictly adhered to. Re-vegetation to be done as quickly as possible. Final re-vegetation to be done as per rehabilitation plan.	
EMP Performance Assessment & Monitoring Reporting	
To be included in EMP/EIA.	
Closure Objective	
The post closure water run-off may in no circumstance impact negatively on the water quality.	

Environmental Component	Surface Water (quantity)
Environmental Management/Mitigation Measures/Action Plans/Commitments	
<p>Change in surface water quantity: Once the area is rehabilitated the surface run-off will be restored and normal clean water run-off will end-up in the drainage system.</p> <p>Once the area is rehabilitated the normal surface run-off drainage will be restored according to rehabilitation plan. The disturbed surface area must be rehabilitated to ensure some normal drainage. Minimal run-off should end-up in trenches. Final rehabilitation will be done according to the final rehabilitation plans after approval by the Department of Mineral Resources.</p>	
EMP Performance Assessment & Monitoring Reporting	
To be included in EMP/EIA.	
Closure Objective	
Ultimately rehabilitation of the disturbed prospecting site and the construction of run-off control structures in a planned and phased manner would ensure normal drainage and stability of rehabilitated site.	

Environmental Component	Ground Water (quality)
Environmental Management/Mitigation Measures/Action Plans/Commitments	
<p>Reduction of groundwater quality: Storm water control measures must be implemented to divert clean water away from the site and keep (silt) contaminated water contained.</p> <p>Vehicles to be inspected to ensure no oil and hydraulic fluid leaks occur. All oil spills on soil to be removed and bio-remediate immediately. No servicing of vehicles must occur except at the workshops. Training w.r.t pollution hazards and their impact on the environment must be given as part of induction training. Storage of fuel and oil should be done according to best practices, within a bunded area and in containers of which the integrity is sound.</p> <p>The prospecting processes will not introduce any harmful or toxic substances and the most likely sources of pollution to the groundwater system would be associated with the infrastructure and / or workshop area. The most likely contaminants is therefore nitrate and bacteria (from sewage / pit latrines), as well as hydrocarbons (from vehicle accidents, diesel storage and the workshop area).</p> <p>An incidence register for this purpose must be kept.</p> <p>Drip trays must be available and used where emergency repairs is done.</p> <p>All waste must be stored according to best practices and disposed at an authorized waste disposal facility.</p>	
EMP Performance Assessment & Monitoring Reporting	
To be included in EMP/EIA.	
Closure Objective	
Post water quality need to indicate a positive trend/improvement.	

Environmental Component	Ground Water (quantity)
Environmental Management/Mitigation Measures/Action Plans/Commitments	
<p>Reduction of groundwater quantity, lowering of groundwater level: Water levels in the boreholes that are used for prospecting activities should be recorded monthly.</p> <p>Water volumes should be recorded continuously to ensure compliance with the water use authorization for abstraction.</p>	
EMP Performance Assessment & Monitoring Reporting	
To be included in EMP/EIA.	
Closure Objective	
Post water quality need to indicate a positive trend/improvement.	

Environmental Component	Air Quality
Environmental Management/Mitigation Measures/Action Plans/Commitments	
<p>Dust: The prospecting method will serve as mitigation measure because prospecting will limit dust to the active prospecting area (area where the excavator and the trucks are operating).</p> <p>Daily spraying of roads with water. Inspection should be done on a daily basis.</p> <p>If new roads are constructed, in coordination with surface owner, dust pollution must be mitigated by means of spraying the roads with water.</p>	
EMP Performance Assessment & Monitoring Reporting	
To be included in EMP/EIA.	
Closure Objective	
Dust count must be the same as before prospecting. Rehabilitation of the bulk sampling site would ensure that no dust is generated from exposed surfaces.	

Environmental Component	Noise
Environmental Management/Mitigation Measures/Action Plans/Commitments	
Ensure the required silencers are placed on all engines and compressors. No mitigation to reverse hooters is allowed due to safety standards. Inspection of vehicles and machinery to ensure silencers are fitted. Ensure that a complaints register is created, managed and maintained. Vehicles and earthmoving equipment should be equipped with the necessary silencers and regularly maintained in a good working condition.	
EMP Performance Assessment & Monitoring Reporting	
To be included in EMP/EIA.	
Closure Objective	
No noise attributed to prospecting will be generated from the site after closure anymore. During decommissioning and closure phase some earth moving equipment and trucks would be utilized for rehabilitation.	

Environmental Component	Archaeological and Cultural Sites
Environmental Management/Mitigation Measures/Action Plans/Commitments	
No graves on site. However, the potential occurrence of unmarked graves or subsurface finds not recorded during this survey can never be excluded, so it is advised that SAHRA and a qualified archaeologist are informed immediately if archaeological objects are uncovered.	
EMP Performance Assessment & Monitoring Reporting	
To be included in EMP/EIA.	
Closure Objective	
No site of archaeological importance should be disturbed or damaged until the necessary permit from SAHRA has been issued.	

Environmental Component	Sensitive Landscapes
Environmental Management/Mitigation Measures/Action Plans/Commitments	
None	
EMP Performance Assessment & Monitoring Reporting	
To be included in EMP/EIA.	
Closure Objective	

Environmental Component	Visual Aspects
Environmental Management/Mitigation Measures/Action Plans/Commitments	
Visual impact would be addressed by means of: * re-vegetation of disturbed areas with grasses; * removal of any temporary building, scrap, domestic waste, etc. that would otherwise contribute to a negative visual impact. Concurrent rehabilitation should be done simultaneously as prospecting activities progress.	
EMP Performance Assessment & Monitoring Reporting	
To be included in EMP/EIA.	
Closure Objective	
No residual visual impacts will remain after closure. The terrain should blend in with the surrounding landscape.	

Environmental Component	Socio-Economics
Environmental Management/Mitigation Measures/Action Plans/Commitments	
There will be a very small increase in Socio – economic activity at local level, because of the size of this prospecting activity.	
EMP Performance Assessment & Monitoring Reporting	
To be included in EMP/EIA.	
Closure Objective	
The economic development must deliver a multiplier effect that will contribute to the local economy long after closure.	

Environmental Component	Interested and Affected Parties
Environmental Management/Mitigation Measures/Action Plans/Commitments	
<p>Access control should always be a priority. Active prospecting site should be fenced off and also any deep water holes.</p> <p>If any problem should arise, meetings will be held with the landowners and affected parties to consult them on certain matters like permission to prospect and pollution.</p> <p>No prospecting should be conducted under or near Eskom power line (10 m distance should be kept) (Permission of Inspector of Mines should be obtained.)</p>	
EMP Performance Assessment & Monitoring Reporting	
To be included in EMP/EIA.	
Closure Objective	
Not to be an economic, social or environmental liability to the local community or the state now or in the future. The company will ensure that the interest of all interested and affected parties will be considered.	

ix) Motivation where no alternative sites were considered.

Alternative is not applicable. There is not an alternative for the location as this is the specific area where the applicant believes minerals can be found. The only alternative will be whether what method of processing to be used, puddle into the pans (wet method) or puddle dam (dry tailings method). The footprint of the actual disturbance on site does have the alternative where the puddle can be deposited onto a puddle dam or back into the excavations whereby the latter will have a smaller footprint. The puddle dam method however can lead to quicker rehabilitation and re-use of the land for grazing as the excavations are backfilled with dry material and immediately rehabilitated.

The applied area is the specific area need for prospecting thus no alternative. The current land is being use as natural grazing. The option to explore the possibility for prospecting is already in itself an alternative land use. The applicant **PG van Zyl (JNR) CC** is not interested in any other alternative land use over this land aside for the exploration of the said minerals, or any other activity, or method use other than prospecting for the said minerals in the conversional way, which is the most cost effective.

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

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

The applied area is to believe where the (**Alluvial Diamonds & Diamonds in Kimberlite**) (minerals) will be found thus the specific area. The prospecting operation will not be a static operation, the mobile plant will move as prospecting progress, thus the whole application is to determine a potential site for when Phase 3 is reached.

h) 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 are 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.)

ASPECT	IMPACTS				CUMULATIVE IMPACTS
1. GEOLOGY					
Nature of the impact	Geology (alluvial deposits will be destroyed during the opencast prospecting operation. During operation which will be for the next 4 years, the mineral resource Diamonds Alluvial & Diamonds in Kimberlite will be extracted from alluvial deposits. Waste rock material/overburden material is disposed off/backfilled in existing excavations as part of the prospecting process.				
Extent	Site				Activity causing the impact
Duration	Permanent				An opencast prospecting method will be used to extract bulk samples. Therefore the original geology will be totally destroyed.
Probability	Definite				
Significance	High				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

ASPECT	IMPACTS	CUMULATIVE IMPACTS								
2. TOPOGRAPHY										
Nature of the impact	<p>* Change in landform :</p> <p>* The prospecting site is situated on: level plains some relief.</p> <p>* Disturbance of the surface drainage:</p> <p>The prospecting of the Diamonds Alluvial & Diamonds in Kimberlite deposits will result in the creation of trenches (10 x 60 x ±3 m or less), that act as depressions in the environment that captures run-off. Prospecting activities will be concentrated as indicated on Appendix 4 on the application area (approximately 3 m depth). Normal surface drainage will be disturbed at a given point. Run-off if any will be diverted away from the specific site.</p>									
Extent	Site	Activity causing the impact								
Duration	Very long to Permanent	Bulk sampling trough trenches, etc.								
Probability	Definite									
Significance	High									
Phase responsible for the impact	<table border="1"> <tr> <td>Phase 1</td> <td>Phase 2</td> <td>Phase 3</td> <td>Closure</td> </tr> <tr> <td></td> <td align="center">X</td> <td align="center">X</td> <td align="center">X</td> </tr> </table>	Phase 1	Phase 2	Phase 3	Closure		X	X	X	
Phase 1	Phase 2	Phase 3	Closure							
	X	X	X							

3. SOIL	IMPACTS	CUMULATIVE IMPACTS								
Nature of the impact	The surface area is characterized by various soil depths. Any construction of infrastructure should be preceded by the removal of all available topsoil.									
Extent	Site	Activity causing the impact								
Duration	Long	In the process of removing topsoil the soil layers are mixed and the structure may be disturbed.								
Probability	High									
Significance	Moderate									
Phase responsible for the impact	<table border="1"> <tr> <td>Phase 1</td> <td>Phase 2</td> <td>Phase 3</td> <td>Closure</td> </tr> <tr> <td></td> <td align="center">X</td> <td align="center">X</td> <td></td> </tr> </table>	Phase 1	Phase 2	Phase 3	Closure		X	X		
Phase 1	Phase 2	Phase 3	Closure							
	X	X								

3. SOIL	IMPACTS	CUMULATIVE IMPACTS								
Nature of the impact	<p>The establishment, construction, operation and eventually rehabilitation (demolition) of listed structures such as the access roads, stockpiles /tailings dumps, cause compaction of soil. All prospecting activities will be concentrated on the identified prospecting focus area where alluvial deposits could be found.</p> <p>In the same time a certain surface area is therefore alienated. The active prospecting surface area (alienated) would be restricted within the ±0.5 ha at any given time (in relation to area of application of the prospecting right of 332 ha) for the next 4 years.</p>									
Extent	Site	Activity causing the impact								
Duration	Long	Site preparation for additional prospecting sites and the construction, operation of listed infrastructure.								
Probability	High									
Significance	Moderate									
Phase responsible for the impact	<table border="1"> <tr> <td>Phase 1</td> <td>Phase 2</td> <td>Phase 3</td> <td>Closure</td> </tr> <tr> <td></td> <td align="center">X</td> <td align="center">X</td> <td align="center">X</td> </tr> </table>	Phase 1	Phase 2	Phase 3	Closure		X	X	X	
Phase 1	Phase 2	Phase 3	Closure							
	X	X	X							

ASPECT	IMPACTS	CUMULATIVE IMPACTS								
3. SOIL										
Nature of the impact	Soil erosion: Due to the fact that certain surface areas would become compacted and this would lead to lesser infiltration of rainwater and more run-off that could cause erosion on bare disturbed surfaces. Erosion would always be possible until such time a vegetation cover is provided during rehabilitation phase.									
Extent	Site	Activity causing the impact								
Duration	Very short	When removing topsoil during site preparation, little storm water control structures are in place. If a severe storm hits the area, it may lead to erosion on site.								
Probability	Very low	Topsoil stockpiles may be prone to erosion due to lack of vegetation cover.								
Significance	Low	Water control structures may fail or severe rainstorms may cause excessive run-off.								
Phase responsible for the impact	<table border="1"> <tr> <td>Phase 1</td> <td>Phase 2</td> <td>Phase 3</td> <td>Closure</td> </tr> <tr> <td></td> <td align="center">X</td> <td align="center">X</td> <td align="center">X</td> </tr> </table>	Phase 1	Phase 2	Phase 3	Closure		X	X	X	Surface compaction due to activities taking place.
Phase 1	Phase 2	Phase 3	Closure							
	X	X	X							

ASPECT	IMPACTS	CUMULATIVE IMPACTS								
3. SOIL										
Nature of the impact	Potential of soil contamination.	None.								
Extent	Site	Activity causing the impact								
Duration	Long	Vehicle/equipment breakages and oil/lubricant /diesel spills may contaminate soil.								
Probability	Moderate									
Significance	Moderate									
Phase responsible for the impact	<table border="1"> <tr> <td>Phase 1</td> <td>Phase 2</td> <td>Phase 3</td> <td>Closure</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Phase 1	Phase 2	Phase 3	Closure					
Phase 1	Phase 2	Phase 3	Closure							

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Impact		X	X	X	
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ASPECT	IMPACTS	CUMULATIVE IMPACTS			
3. SOIL					
Nature of the impact	Loss of soil structure	None			
Extent	Site	Activity causing the impact			
Duration	Long	in the process of removing topsoil the soil layers are mixed and the structure may be disturbed.			
Probability	High				
Significance	Moderate				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

ASPECT	IMPACTS	CUMULATIVE IMPACTS			
3. SOIL					
Nature of the impact	Loss of soil fertility	None			
Extent	Site	Activity causing the impact			
Duration	Short	The mixing of soil during site preparation, compaction and potential pollution (spillages from oil etc.) all may cause this situation.			
Probability	Definite				
Significance	Low				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

ASPECT	IMPACTS	CUMULATIVE IMPACTS			
4. LAND CAPABILITY					
Nature of the impact	Temporary loss of land capability to support grazing. The small area (0.5 ha) where the active prospecting activities occur (trenches, tailings dumps, stock piles, prospecting equipment) etc. will thus be temporary alienated, until the area is rehabilitated. All trenches would be rehabilitated as part of the prospecting process during which trenches are back-filled. If the old areas be re-worked this will make more land available for grazing. The rest of the application area will still be used by the landowner as agricultural land.				
Extent	Site	Activity causing the impact			
Duration	Long	Site preparation for additional prospecting sites and the construction, operation of listed infrastructure, the land capability of the active prospecting area will be totally destroyed.			
Probability	Definite				
Significance	Moderate				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X	X	

ASPECT	IMPACTS	CUMULATIVE IMPACTS			
5. LAND USE					
Nature of the impact	This is a new prospecting operation and therefore will lose its land use to support grazing on a certain portion of the 332 ha during the next 4 years. Only a small portions of land (0.5 ha at a time) would be affected by the prospecting operation relation to the total prospecting right application area of 332 ha. All trenches would be rehabilitated as part of the prospecting process during which excavations are back-filled.				
Extent	Site	Activity causing the impact			
Duration	Long to permanent	Site preparation for prospecting and the construction, operation of listed infrastructure			
Probability	Definite				
Significance	Moderate				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

ASPECT	IMPACTS	CUMULATIVE IMPACTS			
6. VEGETATION					
Nature of the impact	Vegetation clearance, disturbance and trampling. Destruction of habitats for vegetation. Due to a disturbed ecosystem, bare ground and spreading of exotics can follow.				
Extent	Site	Activity causing the impact			
Duration	Long	The site preparation for new sites, construction of listed infrastructure will cause destruction of habitats for vegetation. Due to a disturbed ecosystem, bare ground and invasion of exotics could further spread.			
Probability	Definite				
Significance	High				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	

impact		X	X		The vegetation needs to be cleared to remove the topsoil
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ASPECT	IMPACTS				CUMULATIVE IMPACTS
6. VEGETATION					
Nature of the impact	Habitat change, loss of species, spread of alien and invasive species.				
Extent	Site				Activity causing the impact
Duration	Permanent				The change in the current habitat will be mitigated during final rehabilitation.
Probability	High				
Significance	Moderate				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

ASPECT	IMPACTS				CUMULATIVE IMPACTS
6. VEGETATION					
Nature of the impact	Dust coverage of plants.				None
Extent	Site				Activity causing the impact
Duration	Long				Heavy trucks and other vehicles on dirt roads, stockpiling, dumping of tailings are mainly responsible for this impact.
Probability	High				
Significance	Low				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

ASPECT	IMPACTS				CUMULATIVE IMPACTS
7. WILDLIFE					
Nature of the impact	Wildlife or wildlife habitat destruction /change / disturbance.				None
Extent	Site				Activity causing the impact
Duration	Permanent				The flora which normally serves as habitat for animals would be destroyed during site preparation. The increase in activity will temporarily scare other animals. The area will serve as a new habitat after rehabilitation.
Probability	Very High				
Significance	Moderate				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

ASPECT	IMPACTS				CUMULATIVE IMPACTS
7. WILDLIFE					
Nature of the impact	Injury and death to wildlife.				None
Extent	Site				Activity causing the impact
Duration	Short				The movement of vehicles may kill certain insects, rodents and possible birds. Most of the remaining animal life will however move away due to noise.
Probability	Very low				
Significance	Low				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

ASPECT	IMPACTS				CUMULATIVE IMPACTS
7. WILDLIFE					
Nature of the impact	Restoration of habitat.				None
Extent	Site				Activity causing the impact
Duration	Short				As rehabilitation progresses the habitat of certain species will be restored/created (Closure objective) Animals will probably only move back when human movement is limited.
Probability	Low				
Significance	Low				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X	X	

ASPECT	IMPACTS				CUMULATIVE IMPACTS
8. SURFACE WATER					
Nature of the impact	Change in surface water quality. Spillages from vehicles and also surface water run-off that is not adequately diverted away from the active prospecting excavations could end-up in the excavations creating problems regarding water quality and hindering the prospecting process. Surface run-off from active prospecting sites (overburden dumps & tailings dam/dump) if not adequately contained on site could end-up in the adjacent undisturbed natural veld. If the natural surface run-off is not adequately diverted in the case of the dry-water course area, prospecting sections it could become silted-up.				
Extent	Local				Activity causing the impact
Duration	Short				"Dirty / Clean" water systems at facilities like the overburden dumps, roads, trenches, etc. may impact on the quality of the surface water. The water should
Probability	Moderate				
Significance	High				

Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	be contained in the surface runoff control measures provided therefore.
		X	X		

9. GROUND WATER					
Nature of the impact	Even though abstraction is likely to have a minimal effect on the surrounding groundwater users, this is a new use, and groundwater levels are expected to continue current trends. Groundwater will be abstracted for potable water supply and prospecting processes. The volume of water needed is small (10 000 L/hr) in comparison to other water use and will have a small impact on the surrounding aquifer.				
Extent	Site				Activity causing the impact
Duration	Long				Opencast prospecting operation.
Probability	Low				
Significance	High				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X	X	

ASPECT	IMPACTS				CUMULATIVE IMPACTS
10. AIR QUALITY					
Nature of the impact	Dust will be generated during the prospecting operation (loading with an excavator on to a dump truck) and transportation to the plant (conveyor, drum screen & washing pans) and on gravel/dirt/farm roads. The processing of the gravel is a wet process and therefore minimum dust is generated.				
Extent	Site				Activity causing the impact
Duration	Long				Initial construction work with regard to infrastructure (roads) that involves earth moving equipment. During the phase 2, dust could be generated as indicated during prospecting.
Probability	Moderate				
Significance	Moderate				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X	X	

ASPECT	IMPACTS				CUMULATIVE IMPACTS
11. NOISE POLLUTION					
Nature of the impact	Noise will be generated during the prospecting operation (loading with an excavator on to a dump truck) and transportation to the plant (conveyor, drum screen & washing pans). The mine itself is located in rural landscape. The impact would be of more importance regarding the direct worker environment that should adhere to the requirements in terms of the Mine Health and Safety Act.				
Extent	Local				Activity causing the impact
Duration	Long				Earth moving equipment and vehicles (trucks).
Probability	Definite				
Significance	Moderate				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X	X	

ASPECT	IMPACTS				CUMULATIVE IMPACTS
12. ARCHAEOLOGICAL AND CULTURAL SITES					
Nature of the impact	The terrain is not archaeologically vulnerable. It is unlikely that the proposed development will result in any significant archaeological impact at the site.				
Extent	Site				Activity causing the impact
Duration	Permanent				
Probability	Definite				
Significance	High				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X			

ASPECT	IMPACTS				CUMULATIVE IMPACTS
13. SENSITIVE LANDSCAPE					
Nature of the impact	No sensitive landscapes identified.				
Extent	Not applicable				Activity causing the impact
Duration	Not applicable				
Probability	Not applicable				
Significance	Not applicable				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	

ASPECT	IMPACTS	CUMULATIVE IMPACTS							
14. VISUAL ASPECTS									
Nature of the impact	Prospecting will only be visible to the neighbours living there. The operation is not visible to from any tourist road.								
Extent	Site	Activity causing the impact							
Duration	Long	Diamond prospecting operation.							
Probability	Definite								
Significance	Low								
Phase responsible for the impact	<table border="1"> <tr> <th>Phase 1</th> <th>Phase 2</th> <th>Phase 3</th> <th>Closure</th> </tr> <tr> <td></td> <td>X</td> <td>X</td> <td>X</td> </tr> </table>		Phase 1	Phase 2	Phase 3	Closure		X	X
Phase 1	Phase 2	Phase 3	Closure						
	X	X	X						

ASPECT	IMPACTS	CUMULATIVE IMPACTS							
15. SOCIO ECONOMICS									
Nature of the impact	Increase in Socio – economic activity at local level. The project in itself would ensure that approximately 4 workers would be assured of a job for some time. Job creation plays a major role in increasing the economic wellbeing of employees and their dependants in the Wolmaransstad district. Once all prospecting operations have ceased it would definitely have a negative impact.	The increase in socio-economic activity will add to the current growth and development in Wolmaransstad already created by industry and prospecting.							
Extent	Local	Activity causing the impact							
Duration	Long	Additional employment opportunities created.							
Probability	Definite								
Significance	High								
Phase responsible for the impact	<table border="1"> <tr> <th>Phase 1</th> <th>Phase 2</th> <th>Phase 3</th> <th>Closure</th> </tr> <tr> <td></td> <td>X</td> <td>X</td> <td>X</td> </tr> </table>		Phase 1	Phase 2	Phase 3	Closure		X	X
Phase 1	Phase 2	Phase 3	Closure						
	X	X	X						

ASPECT	IMPACTS	CUMULATIVE IMPACTS							
15. SOCIO ECONOMICS									
Nature of the impact	The main impact on the landowners is visual impact and the small area of 0.5 ha that will not be available for agricultural activities at any given time for 4 years. The applicant is also the landowner.	The economic benefits in terms of investment and the delivery of services in the North-west province will get an additional benefit from the project.							
Extent	Regional	Activity causing the impact							
Duration	Very Long								
Probability	High								
Significance	Moderate								
Phase responsible for the impact	<table border="1"> <tr> <th>Phase 1</th> <th>Phase 2</th> <th>Phase 3</th> <th>Closure</th> </tr> <tr> <td></td> <td>X</td> <td>X</td> <td>X</td> </tr> </table>		Phase 1	Phase 2	Phase 3	Closure		X	X
Phase 1	Phase 2	Phase 3	Closure						
	X	X	X						

ASPECT	IMPACTS	CUMULATIVE IMPACTS							
16. INTERESTED & AFFECTED PARTIES									
Nature of the impact	Impact of activities on I&AP's Temporary loss of utilization of the prospecting focus areas for agricultural purposes. The long-term benefits far out-weight the current benefits from the current use. Loss of cattle due to falling of animals in mine workings if not fenced. No negative impact is expected that could be appropriately mitigated, such as the eventual rehabilitation of the excavations.								
Extent	Local	Activity causing the impact							
Duration	Long								
Probability	High								
Significance	High								
Phase responsible for the impact	<table border="1"> <tr> <th>Phase 1</th> <th>Phase 2</th> <th>Phase 3</th> <th>Closure</th> </tr> <tr> <td></td> <td>X</td> <td>X</td> <td>X</td> </tr> </table>		Phase 1	Phase 2	Phase 3	Closure		X	X
Phase 1	Phase 2	Phase 3	Closure						
	X	X	X						

i) Assessment of each identified potentially significant impact and risk

(This section of the report must consider all the amount/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: on-site site camp, vehicle, tools, accommodation, equipment, storage, sample storage, site office, access roads etc. etc. etc. E.g. For mining: excavators, blasters, trucks, haul trucks, large or small, loaders, haulers, and support (water supply, dams and canals), accommodation, offices, ablution, water washing, processing plant, start water control, dams, roads, pipelines, bore lines, concrete, etc., etc., etc.)	POTENTIAL IMPACT (Including the potential impacts to environmental aspects) E.g. dust, noise, drainage, blocked drainage, by roads, vibration, ground water contamination, air pollution, etc., etc., etc.)	ASPECTS AFFECTED	PHASE (in which impact is anticipated)	SIGNIFICANCE if not mitigated	MITIGATION TYPE (except for noise and vibration, non-water control, dust control, rehabilitation design, road signs, blasting control, avoidance, relocation, alternative activity etc. etc.)	SIGNIFICANCE if mitigated
Excavations for gravel and stone	1.1 Removal of the alluvial gravel up to 3 m. Disturbance of 0.5 hectare at any given time. 1.2 Change in landform. The entire prospecting area will be lowered by 3 m and normal surface drainage will be disturbed at this specific point. The pit will be backfilled.	Geology & soil Topography	Operational Operational and closure	High - Moderate -	The impact will be mitigated by backfilling and sloping the sides and stabilizing the soil to prevent erosion. The pit will be backfilled. The sides will be sloped and top soiled and vegetated. A surface water cut-off trench should be put in place around the active prospecting site in order to prevent surface run-off water on the prospecting site. Rehabilitation of the new sloped landscape in such a way that it would blend in with the surrounding landscape.	Low + Moderate +
	1.3 Stripping of all available topsoil and stockpiled. Stockpile and plant area of 0.25 hectare at any given time. 1.4 Soil erosion. Due to the fact that certain surface areas would become devoid of any vegetation cover and compacted this would lead to lesser infiltration of rain water and more run-off that could cause erosion on bare disturbed areas and side slopes	Soil Soil	Construction and Operational Construction	Low - Low-	Any area on the prospecting area where disturbance will take place the top soil must be removed and stockpiled for rehabilitation purposes in a demarcated area. To take preventative steps against erosion, implement and maintain cut-off trenches and on berms around the prospecting area to prevent water entering that can cause erosion. Concurrent rehabilitation and re-vegetation of mined areas must happen as soon as the particular area is mined out. Rehabilitated areas must be inspected and managed in such a way that any signs of erosion can be mitigated immediately. As this is only a very small area of 0.5 hectare, the impact is not so big. As the excavation will be backfilled and vegetated the rehabilitated area must be treated as sensitive when grazed as overgrazing can trigger erosion and infiltration of decaying weeds.	Low + Low +
	1.5 Land capability and land use. Loss of land to support grazing.	Land capability & Land use	Operational and closure	Low-	The prospecting method will serve as mitigation measure because it will limit dust to the active prospecting area, where the excavator and trucks operating. Daily spraying of the roads with water.	
	1.6 Generation of dust by excavating and vehicle movement	Air quality	Operational	Low -		

j) Summary of specialist reports.

(This summary must be completed if any specialist reports formed the input 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 <small>(Where applicable)</small>	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
None			

k) Environmental impact statement**(i) Summary of the key findings of the environmental impact assessment;**

The small scale alluvial gravel prospecting operation is definitely going to have an impact on the environment. The main impact relates to topography, geology, soil, vegetation, and land use and land capability. The Diamonds Alluvial & Diamonds in Kimberlite resource will be prospected over a period of 4 years. The existing land-use is agriculture, grazing land and cultivation of cash crops. This is a small operation and for the next 4 years only a small portion of the farm will be temporarily alienated.

The conservation of topsoil is of utmost importance and therefore in order to ensure a sustainable land use again on the 0.5 ha, the top at least 30 cm topsoil need to be removed prior to prospecting of the underlying alluvial gravel (up to 3 m depth). This will be used again as growth medium during the rehabilitation phase of the excavations. Topsoil will be stored in berm walls on the border of the excavation in order to divert any surface run-off during a rainfall event. Other environmental impacts relates to the day to day operation that could easily be managed, such as dust and noise.

(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 1 (a) – Infrastructure Map.**

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

The site is selected in such a way that farming will still be possible on the rest of the farm. The loss of land use and land capability will be temporary as the site will be rehabilitated in such a way that it allows the establishment of a grass cover again. The rest of the farm will still be continued to be used for grazing for cattle. Although this is small Diamonds Alluvial & Diamonds in Kimberlite prospecting operation it would also add to the increased economic activity within the farming and exiting mining community around Wolmaransstad. Jobs for 4 permanent laborers will be created. Negative impacts on the area are expected to be temporary and can be mitigated to a large extent if the recommendations of the EMP are adhered to e.g. rehabilitation. No concerns have been raised as yet by any I & AP. The specific minerals occurrence of the Diamonds Alluvial & Diamonds in Kimberlite deposit dictates the selection of the specific prospecting site.

l) 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.

In term of NEMA – EIA Regulations No. 326 of 7 April 2017 – Reg. 21, Appendix 3 – 1. (1)(d)

The main closure objective of **PG van Zyl (JNR) CC** is to rehabilitate the entire prospecting site in such a way to ensure that the new man-made topographical landscape would blend in with the surrounding landscape, not pose a safety hazard to humans and animals, while at the same time allow for alternative land uses. Establish a self-sustaining and stable vegetation cover in order to mitigate the visual impact, to control erosion and to create some habitat for animals. The rehabilitated environment also needs to be aesthetically acceptable according to the principle of BPEO. The applicant will ensure that the Operation/Sites are:

- Neither a danger to public health and safety nor to animal health and safety;
- Not a source of any pollution;
- Stable (ecological and geophysical);
- Rehabilitated to the state that is suitable for the predetermined and agreed land use (grazing);
- Compatible with the surrounding biophysical environment;
- A sustainable environment;
- Aesthetically acceptable;
- Not an economic, social or environmental liability to the local community or the state now or in the future.

m) Final proposed alternatives.

(Provide an explanation for the final layout of the infrastructure and activities on the overall site as shown on the final site map together with the reasons why they are the final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment)

None

n) Aspects for inclusion as conditions of Authorisation.

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

None

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

(Which relate to the assessment and mitigation measures proposed)

None

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

None

h) Reasons why the activity should be authorized or not.

This activity will have only low and very low impacts and no significant impacts were identified. No concerns were raised by the interested parties. These prospecting activities will have no significant impacts on them or their surrounding environment.

ii) Conditions that must be included in the authorization

None

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

None

(2) Rehabilitation requirements

Normal rehabilitation

q) Period for which the Environmental Authorization is required.

4 years.

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.

The Environmental Management Programme will, should it comply with the provisions of section 39 (4) (a) of the Act and the right be granted, be approved and become an obligation in terms of the right issued. As part of the proposed Environmental Management Programme, the applicant is required to provide an undertaking that it will be executed as approved and that the provisions of the Act and regulations thereto will be complied with.

UNDERTAKING BY APPLICANT TO COMPLY WITH THE PROVISIONS OF THE ACT AND THE REGULATIONS THERETO

UNDERTAKING

I, D. E. Erasmus, the undersigned and duly authorised thereto by PG van Zyl (JNR) CC have studied and understand the contents of the Environmental Management Programme and duly undertake to adhere to the conditions as set out therein, unless specifically or otherwise agreed to.

Signed at Klerksdorp on this day 1st of July 2019.

.....

Signature of Mine Manager

s) Financial Provision

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

It is envisaged that there will be trenches open of 0.4 hectares and surface disturbance of 0.3 hectares for the plant area. Thus the total liability of R106 605.00 for rehabilitation. See quantum attached as Appendix 3.

i) Explain how the aforesaid amount was derived.

It is envisaged that as concurrent rehabilitation of the excavation will be practiced on 0.5ha of opencast disturbance will be opened at any given time and 0.25 hectares of surface disturbance for the plant area. The quantum will be monitored on an annual basis and if this figures are not in line it will be rectified by additional guarantee. The amount was determined through the quantum tables provided by DMR.

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

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

Yes it is hereby confirmed that the amount will be provided from operating expenditure.

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 mining 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

The applicant will remunerate the occupier for the land used as agreed upon. No other person will be directly affected by this activity.

(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 mining 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)(v) and (vi) 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).

There is no graveyard within the application area. According to Section 36(3) of the National Heritage

Resources Act 25 of 1999 no person may, without a permit issued by SAHRA or a provincial heritage resources authority—

(a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;

(b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or

(c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.

It is recommended that the graveyard is included in the overall management plan of the mine development. Preservation of the site will require that the area is properly demarcated with at least a 20m buffer zone placed around the graveyard in order to avoid potential damage during prospecting activities. It will be necessary to ensure that the graveyard is accessible to the relatives of the deceased.

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)(f), exist. The EAP must attach such motivation as Appendix 1).

There are no alternatives, as the application area applied for is the area where the applicant believes is potential for alluvial gravel deposits.

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)
The EAP Mr. Daan Erasmus has a National Diploma in Agriculture Resource Utilization and a Baccalaureus Technologiae degree in Agricultural Extension.

Yes see Part A.

- b) Description of the Aspects of the Activity** (Confirm that the requirement to describe the aspects of the activity that are covered by the draft environmental management programme is already included in PART A, section 1(x)(h) herein as required).

Yes see Part A.

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)

See Appendix 1 (a)

d) Description of Impact management objectives including management statements

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

The main closure objective of **PG van Zyl (JNR) CC** is to rehabilitate the entire prospecting site in such a way to ensure that the new man-made topographical landscape would blend in with the surrounding landscape, not pose a safety hazard to humans and animals, while at the same time allow for alternative land uses. Establish a self-sustaining and stable vegetation cover in order to mitigate the visual impact, to control erosion and to create some habitat for animals. The rehabilitated environment also needs to be aesthetically acceptable according to the principle of BPEO. Another main objective is to manage the surface water in such way that an acceptable water standard is achieved when a closure certificate is issued.

As this area was disturbed before there is not top soil available on all the areas but on the non-disturbed area all available top soil will be stripped and stockpiled.

PG van Zyl (JNR) CC will ensure that the Operation/Sites are:

- ✓ Neither a danger to public health and safety nor to animal health and safety;
- ✓ Not a source of any pollution;
- ✓ Stable (ecological and geophysical);
- ✓ Rehabilitated to the state that is suitable for the predetermined and agreed land use;
- ✓ Compatible with the surrounding biophysical environment;
- ✓ A sustainable environment;
- ✓ Aesthetically acceptable;
- ✓ Not an economic, social or environmental liability to the local community or the state now or in the future.

PG van Zyl (JNR) CC will furthermore:

- ✓ Ensure that the physical and chemical stability of the rehabilitated site will be such that risk to the environment is not increased by naturally occurring forces to the extent that such increased risk cannot be contended with by the installed measures;
- ✓ Subscribe to the optimal exploitation and utilization of South Africa's mineral resources Diamonds Alluvial & Diamonds in Kimberlite;
- ✓ Ensure that the prospecting site is closed efficiently and cost effectively.
- ✓ Ensure that the operation is not abandoned but closed in accordance with the relevant requirements;
- ✓ Ensure that the interest of all interested and affected parties will be considered;
- ✓ Ensure that the all-relevant legislation regarding mine closure will be adhered to, and all relevant application procedures followed.

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

100 000 liters a day will be used for washing pans. A certain percentage of this water will be circulated for re-use.

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

Application will be submitted.

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

ACTIVITIES <small>(E.g. For mining – all site site camp, labour camp, accommodation, equipment storage, sewage storage, site office, access roads etc., etc., etc. For farming, construction, building, installation, disposal of waste, loading, unloading and transport, their support farms and buildings, accommodation, offices, labour, farm, workshop, processing plant, farm water control dams, roads, pipelines, power lines, conveyor, etc., etc., etc.)</small>	PHASE <small>(e.g. Exploration in which activity will take place Site, planning and design, Production, Construction, Operation, Rehabilitation, Closure, Post closure)</small>	SIZE AND SCALE of disturbance <small>(Volume, tonnage, etc. measures or m)</small>	MITIGATION MEASURES <small>(Describe how each of the recommendations in here will remedy the cause of pollution or degradation and mitigation of pollutants)</small>	COMPLIANCE WITH STANDARDS <small>(A description of how each of the recommendations here will comply with any prescribed environmental management standards or practices that have been identified by competent authorities)</small>	TIME PERIOD FOR IMPLEMENTATION <small>(Describe the time period when the measures of the environmental management programme will be implemented. Indicate how the measures will be implemented after required. Where relevant, indicate specifically the measures to be implemented in the period of the impact to be avoided or reduced. Upon cessation of mining, bulk services or other licensed activity as the case may be.</small>
<p>1. Excavations:</p> <ul style="list-style-type: none"> ✓ destruction of geology; ✓ change in topography; ✓ loss of soil structure; ✓ compaction/loss of land capability; ✓ temporary loss of land use; ✓ disturbance of vegetation cover; ✓ disturbance of animal life; ✓ visual impact 	Operational	0.4 hectares at any stage	Keep to optimal well planned prospecting plan/Concurrent rehabilitation by sloping the sides of the excavation to be stable/Sustainable and covered with topsoil and vegetation/Surface run-off measures be put in place/Restrict clearing of surface area to necessary areas/ Re-establishment of vegetation on rehabilitated area	The pits will be sloped for stability and providing a base for the replacement of topsoil.	As part of concurrent rehabilitation.
<p>2. Gravel Stockpile area:</p> <ul style="list-style-type: none"> ✓ compaction of soil; ✓ surface drainage will be disturbed; ✓ increase of silt load/ visual impact 	Operational	0.3 hectares at any stage	Keep this area as small as possible within the demarcated area/ Prevent spillages of fuels by machines	Immediate cleaning of spillages	Concurrent with prospecting
<p>3. Washing of alluvial gravel:</p> <ul style="list-style-type: none"> ✓ soil contamination; ✓ potential of negative impact on surface water; ✓ dust pollution; ✓ reduction in groundwater quality; ✓ increase in noise pollution; ✓ visual impact 	Operational	0.3 hectares at any stage	Keep this area as small as possible/ Prevent spillages of fuels by equipment/Surface run-off measures be put in place/	Immediate cleaning of spillages	Concurrent with the prospecting
<p>4. Surface infrastructure:</p> <ul style="list-style-type: none"> ✓ compaction of soil; ✓ surface drainage will be disturbed; ✓ reduction in groundwater quality; ✓ visual impact 	Operational		Keep this area as small as possible within the demarcated area/ Prevent spillages of fuels by machines/Surface run-off measures be put in place/Remove temporary buildings, scrap, domestic waste, etc.	Remove temporary buildings, scrap, domestic waste, etc. as soon as possible.	
<p>5. Prospecting Vehicle:</p> <ul style="list-style-type: none"> ✓ soil contamination/loss of soil structure; ✓ loss of soil fertility; ✓ potential of negative impact on surface water; ✓ reduction in groundwater quality; ✓ visual impact 	Operational		Stay on mine roads/ Prevent spillages of fuels by machines/Surface run-off measures be put in place/regular service of vehicles and machinery/daily spraying of road surfaces to reduce dust/Driv. trays must be available under parked mine vehicles/vehicles must be serviced over concrete slab of PVC lined areas/used oils and lubricants be stored over concrete slab and regularly removed.		

e) Impact Management Outcomes

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

ACTIVITY (Where listed in table 1) (E.g. Excavation, boring, rockpiles, access drives or dams, Loading, backfill and transport, other supply items and materials, construction, office, aviation, dams, workshop, processing plant, storm-water control, bore, rock piling, pipe test, concrete, etc., etc., etc.)	POTENTIAL IMPACT (E.g. dust, noise, drainage surface disturbance, ground surface water contamination, etc.) (E.g. etc.)	ASPECTS AFFECTED	PHASE (In which impact is anticipated) (E.g. Construction commencement, operational, decommissioning phase, post-closure)	MITIGATION TYPE (Specify, remedy, control, or any other approach) (E.g. Noise control measures, storm-water control, dust control, vibration control, drainage, blasting control, avoidance, alternative activities, etc., E.P., etc.) (Specify through alternative method) (Control through time control) (Control through management/monitoring) (Control through rehabilitation)	STANDARD TO BE ACHIEVED (To what extent the level of disturbance, etc., etc., etc.)
1. Excavations for alluvial gravel	1.1 Removal of the gravel up to 3 m 1.2 Change in landform. The entire prospecting area will be lowered by 3 m and normal surface drainage will be disturbed at this specific point. The pit will be backfilled	Geology & soil Topography	Operational Operational and closure	The impact will be mitigated by backfilling and sloping the sides of the excavation and stabilizing the soil to prevent soil erosion. The side of pit will be sloped and the soil stabilized to prevent erosion. A surface water cut-off trench should be put in place around the active prospecting site in order to prevent surface water on the prospecting site. Rehabilitation of the new sloped landscape in such a way that it would blend in with the surrounding landscape.	Stable slopes that can sustain erosion without excessive erosion. Gentle stable slopes.
	1.3 Stripping of all available topsoil and stockpiled	Soil	Construction and operational	The top soil must be removed before any disturbance take place. The top soil must be removed and stockpile in a demarcated area for rehabilitation purposes. To take preventative steps against erosion. Implement and maintain cut-off trenches and/or beams around the prospecting area to prevent water entering that can cause excessive erosion.	Enough topsoil for rehabilitation to ensure sustainable vegetation. No excessive erosion that cannot be stabilized.
	1.4 Soil erosion due to the fact that certain surface areas would become devoid of any vegetation cover and compact. This would lead to lesser infiltration of rain water and more run-off that could cause erosion on bare disturbed areas and side slopes.	Soil	Construction and operational	As this is only a very small area of 0.5 hectare, the impact is low. As the sides will be sloped and vegetated, the rehabilitated area must be treated as sensitive when grazed as overgrazing can trigger erosion and infiltration of cleared weeds. The generation of dust will only be localized at the prospecting site. Daily spraying of roads with water	Sustainable rehabilitated area.
	1.5 Loss of Land capability & land use.	Land capability & land use	Operational and closure		
	1.6 Generation of dust by excavating and vehicle movement	Air quality	Operational		No excessive dust that can be harmful to the environment and humans.

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f) Impact Management Actions

ACTIVITY (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).	POTENTIAL IMPACT (A description of the nature and extent of the impacts that may be expected to occur as a result of the activity, including the magnitude, duration, frequency, and timing of the impacts, and the likelihood of their occurrence.)	MITIGATION TYPE (A description of the measures that will be implemented to avoid, prevent, or reduce the impacts, including the nature, timing, and duration of the measures, and the likelihood of their effectiveness.)	TIME PERIOD FOR IMPLEMENTATION (A description of the period during which the measures will be implemented, including the start and end dates, and the frequency of implementation.)	COMPLIANCE WITH STANDARDS (A description of how each of the requirements in 2.11.6 read with 2.12 and 2.13 will be met, including any specific measures that have been identified by the Commission.)
Excavations for alluvial gravel	1.1 Removal of the gravel up to 3 m	The bulk of the material removed will be washed and the puddle back to the excavation. The impact will be mitigated by backfilling the excavation and stabilizing the soil to prevent soil erosion.		
	1.2 Change in landform. The entire prospecting area will be lowered by 3 m and normal surface drainage will be disturbed at this specific point. The pit will be backfilled	The pit will be backfilled and the soil stabilized to prevent erosion. A surface water cut-off trench should be put in place around the active prospecting site in order to prevent surface water on the prospecting site. Rehabilitation of the new rehabilitated landscape in such a way that it would blend in with the surrounding landscape.		
	1.3 Stripping of all available topsoil and stockpiled	The top soil must be removed before any disturbance take place. The top soil must be removed and stockpile in a demarcated area for rehabilitation purposes		
	1.4 Soil erosion due to the fact that certain surface areas would become devoid of any vegetation cover and compacted. This would lead to lesser infiltration of rain water and more runoff that could cause erosion on bare disturbed areas and side slopes.	To take preventive steps against erosion. Implement and maintain cut-off trenches and or berms around the prospecting area to prevent water entering that can cause excessive erosion.		
	1.5 Loss of Land capability & land use	As this is only a very small area of 0.5 ha, the impact is low. As the sides will be sloped and vegetated, the rehabilitated area must be treated as sensitive when grazed as overgrazing can trigger erosion and infiltration of cleared weeds.		
	1.6 Generation of dust by excavating and vehicle movement	The generation of dust will only be localized at the prospecting site. Daily spraying of roads with water		

J Financial Provision**(f) 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.**

The main closure objective of **PG van Zyl (JNR) CC**, is to rehabilitate the entire prospecting site in such a way to ensure that the new man-made topographical landscape would blend in with the surrounding landscape, not pose a safety hazard to humans and animals, while at the same time allow for alternative land uses. Establish a self-sustaining and stable vegetation cover in order to mitigate the visual impact, to control erosion and to create some habitat for animals. The rehabilitated environment also needs to be aesthetically acceptable according to the principle of BPEO. Another main objective is to manage the surface water in such way that an acceptable water standard is achieved when a closure certificate is issued.

PG van Zyl (JNR) CC will ensure that the Operation/Sites are:

- Neither a danger to public health and safety nor to animal health and safety;
- Not a source of any pollution;
- Stable (ecological and geophysical);
- Rehabilitated to the state that is suitable for the predetermined and agreed land use;
- Compatible with the surrounding biophysical environment;
- A sustainable environment;
- Aesthetically acceptable;
- Not an economic, social or environmental liability to the local community or the state now or in the future.

PG van Zyl (JNR) CC will furthermore:

- Ensure that the physical and chemical stability of the rehabilitated site will be such that risk to the environment is not increased by naturally occurring forces to the extent that such increased risk cannot be contended with by the installed measures;
- Subscribe to the optimal exploitation and utilization of South Africa's mineral resources Diamonds Alluvial & Diamonds in Kimberlite;
- Ensure that the prospecting site is closed efficiently and cost effectively.
- Ensure that the operation is not abandoned but closed in accordance with the relevant requirements;
- Ensure that the interest of all interested and affected parties will be considered;
- Ensure that the all-relevant legislation regarding mine closure will be adhered to, and all relevant application procedures followed.

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

Yes, the disturbance that will take place and the rehabilitation thereof were discussed on the site visit with the landowner.

(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.

a. Rehabilitation:

The clearing of soil surface areas would be restricted to what is really necessary for the construction of infrastructure/crushing plant. During rehabilitation of these sites, or where vegetation is lacking or compacted, the areas would be ripped or ploughed and leveled in order to re-establish a growth medium and if necessary appropriately fertilized to ensure the re-growth of vegetation and the soil ameliorated based on a fertilizer recommendation (soil sample analyses).

Rehabilitation of access roads

Whenever a prospecting right is suspended, cancelled or abandoned or if it lapses and the holder does not wish to renew the permit or right, any access road or portions thereof, constructed by the holder and which will no longer be required by the landowner/tenant, shall be removed and/or rehabilitated to the satisfaction of the Regional Manager.

Any gate or fence erected by the holder which is not required by the landowner/tenant, shall be removed and the situation restored to the pre-prospecting situation.

Roads shall be ripped or ploughed, and if necessary, appropriately fertilized (based on a soil analysis) to ensure the re-growth of vegetation. Imported road construction materials which may hamper re-growth of vegetation must be removed and disposed of in an approved manner prior to rehabilitation.

If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analyzed and any deleterious effects on the soil arising from the prospecting operation be corrected and the area be seeded with a seed mix to the Regional Manager's specification.

Rehabilitation of the surface prospecting site

On completion of operations, all buildings, structures or objects on the camp/office site shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002), which states:

- (1) When a prospecting right, mining right, retention permit or mining permit lapses, is cancelled or is abandoned or when any prospecting or mining operation comes to an end, the holder of any such right or permit may not demolish or remove any building, structure, object -
 - (A & B) which may not be demolished in terms of any other law;
 - (C) which has been identified in writing by the Minister for purposes of this section; or
 - (c) Which is to be retained in terms of an agreement between the holder and the owner or occupier of the land, which agreement has been approved by the Minister in writing.
- (2) The provision of subsection (1) does not apply to bona fide prospecting equipment which may be removed

The excavations surface area shall be ripped or ploughed to a depth of at least 300mm and the topsoil previously stored adjacent the site, shall be spread evenly to its original depth over the whole area.

After all the foreign matter has been removed from the prospecting sites, the area levelled and the previously stored topsoil replaced.

The area shall then be fertilized if necessary (based on a soil analysis). The site shall be seeded with a vegetation seed mix (section C) adapted to reflect the local indigenous flora. Where the site has been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.

Photographs of the site, before and during the prospecting operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the Regional Manager.

Rehabilitation of the new topographical landscape in such a way that it would blend in with the surrounding landscape and allow normal (controlled) surface drainage to continue.

Implement water control systems in order to prevent erosion. Seed the area (see C. (below) for recommended seed mixture).

Visual impact would be addressed by means of;

- re-vegetation (grasses);
- removal of any building, scrap, domestic waste, etc. that would otherwise contribute to a negative visual impact.

Fertilizing of Areas to be Rehabilitated

If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analyzed and any deleterious effects on the soil arising from the prospecting operation be corrected and the area be seeded with a seed mix to his or her specification.

Seeding of Grass Seed Mixture and planting of Woody Species

The eventual seed mixture takes into account the availability of seed, different soil situations and the prevailing climatic conditions of the area. The following mixture will be applicable to the borehole prospecting site:

- ✓ Cenchrusciliaris
- ✓ Cynodondactylon
- ✓ Digitariaeriantha
- ✓ Heteropogoncontortus
- ✓ Panicum maximum

b. Demolition of infrastructure/buildings

On completion of operations, all buildings, structures or other on the prospecting terrain shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002). There will be no permanent buildings.

c. Invasive and alien control programme

Develop and implement an invasive and alien control programme to control the spread of weeds and other invasive species. Eradicate exotic weeds and invader species if it invades the terrain. All illegal invader plants and weeds shall be eradicated as required in terms of Regulation 15 & 16 of the Act on Conservation of Agricultural Resources, 1983 (Act no. 43 of 1983) which list the plants.

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

The excavations will be backfilled with puddle and top soil will be placed back. This site can be rehabilitated.

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

R 106 605, see Appendix 3 – Quantum Table.

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

The financing for this project will be done from the account PG van Zyl (JNR) CC, the applicant himself out of own funds. The guarantee will be provided in the form of Bank Guarantee after confirmation of the amount.

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 and Mechanisms 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
Prospecting sites/Soil	Possible spillages of petrochemicals. Stripping of topsoil	Checking for spillages on daily basis. Checking correct stripping and stockpiling of topsoil	Manager and Applicant	Daily checking and reporting with Performance Assessment
Prospecting sites/Topography	Concurrent backfilling of excavations.	Checking stability of slope and erosion preventive measures	Manager and applicant	Quarterly
Prospecting sites/Air quality	Dust pollution from prospecting activities.	Regular wetting of roads and stockpile area where loading take place.	Manager and applicant	Daily
Prospecting site	Chemical toilet	Make sure that it is used and hygienic.	Manager and Applicant	Weekly.

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

An EMP Performance Assessment will be submitted to the Management and the DMR on an annual basis.

m) Environmental Awareness Plan

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

PG van Zyl (JNR) CC will contract DERA Environmental Consultants to inform the employees after the EMP was approved. The following guidelines will be used:

- ✓ Communication
- ✓ Urge
- ✓ Leadership
- ✓ Teamwork
- ✓ Understanding
- ✓ Recognition
- ✓ Empowerment (CULTURE)

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

The risks of avoiding pollution will be mainly on spillages of fuel and oil. This will be dealt through proper maintenance on all equipment, daily checks for leaks on vehicles, putting dripping trays underneath all stationary machinery, proper storage in a bunded lined facility for the fuel and storage of oil in a container with roof and floor. The proper management of old oil through a company like Oilkol will also be important.

The above measure will ensure no degradation of the environment as well as the proper storage of the top soil and proper rehabilitation and replacement of the top soil as the excavation will have the biggest impact on environment but can be mitigated through proper rehabilitation

n) Specific information required by the Competent Authority

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

The quantum for rehabilitation liability will be reviewed with the performance assessment on annual basis. **See Table 10.**

Table 10: Monitoring Plan

Action	Frequency	Method	Period
1. Monitoring of perimeter fence	Monthly and following any heavy rainfall.	Foot or vehicle patrol. Record	Until closure.
2. Monitoring of re-vegetation Mined out and rehabilitated areas Leveled and Rehabilitated Dumps Mine residue dam walls Old roads Covered over waste pits Rehabilitation plots	Every 6 months	Foot inspection Initiate set up of test plots Photograph. Transect / Quadrant Get consultants in if necessary.	Until closure.
3. Monitoring of erosion Roads Mine residue dam walls Rehabilitated mined out areas Dumps Pumps and pipelines Any other areas	Every 6 months and following any heavy rainfall	Visual inspection Walk over rehab. Areas Drive along roads. Check pipelines and pumps: mine residue dams, dumps. Photographic records.	Until closure

4. Monitoring of alien plants over the whole site.	On-going until under control - then every 6 months.	Visual inspection on foot patrol. Map presence of invasive plants. Plan removal, remove and document area covered on monthly basis. Verify Photograph.	On-going until closure
5. Monitoring of Water Quality from selected points	Every 6 months	Build up database and graph the results. Compare with limits and take action on non-conformances.	Until closure.
6. Monitoring of all Rehabilitation Areas. Check compliance with gradients and variation in topography	Every 6 months.	Survey- map new rehabilitated areas. Plot on map and calculate area treated. Get rehab consultants in if necessary.	Until closure.
7. Monitoring of stability of mine Residue dams and water Storage facilities.	Monthly and summarize every 6 months	Follow specifications in mandatory code of practice for puddle dams	Until closure
8. Monitoring of disposal of metal scrap, old oil, oil filters, old oil drums, oily cloths, batteries, fluorescent tubes, tires and contaminated soil (Hazardous waste)	Monthly and summarize every 6 months.	Record each load sent off the site. Give used oils to Oilkol Ensure safe disposal certificates are obtained from suppliers if the material is given back to them.	Until closure.
9. Monitoring of maintenance of general waste disposal	All loads of waste to be recorded and quantity extrapolated. Covering of waste pit - Monthly.	Running total of loads of waste taken Record of waste taken to Wolmaransstad waste disposal site Keeping record of waste taken to disposal site	Until closure
10. Monitoring of condition of septic tanks	Every six months	Visual inspection. Record condition.	Until closure
11. Monitoring of condition of bunded Areas around diesel fuel tanks, Refueling area, old oil tank; and underground petrol tank.	Every six months.	Visual inspection	Until closure
12. Monitoring of water use.	Monthly	Record total water use and water use at different plants by recording flow meters. Ensure compliance with license.	Until closure

2) UNDERTAKING

The Environmental Assessment Practitioner

DE Erasmus

I, I

General declaration:

- I act as the independent environmental practitioner in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in regulation 8 of the regulations when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;

- I will keep a register of all interested and affected parties that participated in a public participation process; and
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favorable to the applicant or not
- all the particulars furnished by me in this form are true and correct;
- will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I realize that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.

Disclosure of Vested Interest (delete whichever is not applicable)

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2010;
- I have a vested interest in the proposed activity proceeding, such vested interest being:

The EAP herewith confirms

- a) the correctness of the information provided in the reports
- b) the inclusion of comments and inputs from stakeholders and I&APs;
- c) the inclusion of inputs and recommendations from the specialist reports where relevant; and
- d) that the information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein.

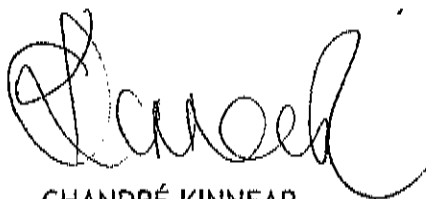


Signature of the environmental assessment practitioner

DERA Omgewingskonsultante (Pty) Ltd

Name of company

-END-



CHANDRÉ KINNEAR

COMMISSIONER OF OATHS / KOMMISSARIS VAN EDE

Appointed in terms of Section 5(1) of Act 16 of 1963

Aangestel in terme van Artikel 5(1) van Wet 16 van 1963

Centrallaan 32 Central Avenue, Flamwood, Klerksdorp

Appointed/Aangestel: 16 March 2017

Reference/Verwysing: 9/1/8/2 Klerksdorp