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DEPARTMENT OF MINERALS AND ENERGY

ENVIRONMENTAL MANAGEMENT PLAN

Submitted in support of application for a prospecting right.
Section 39 and Regulation 52 of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002)

Application for a:		
	Prospecting Right	√
	Mining Permit	

Applicant: DE BEERS CONSOLIDATED MINES LIMITED

Farms: SUBDIVISION 1 (KING'S PADDOCK), SUBDIVISION 16 AND THE REMAINING EXTENT OF THE FARM JAGERSFONTEIN 14

District: FAURESMITH DISTRICT, FREE STATE PROVINCE

Mineral: DIAMONDS (ALLUVIAL, GENERAL AND IN KIMBERLITE)

Date: 14 June 2010

Contents

A.1 INTRODUCTION

This document aims to provide a simplified national standard for applicants for prospecting rights and mining permits to comply with the relevant legislation and environmental regulations as apply to their respective applications in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002)(MPRDA).
Applicants in this sector of the mining industry typically disturb smaller surface areas of land, whether drilling boreholes, small trenches, or mining on a small area, less than 1,5 hectares of land, under a mining permit as contemplated in Section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002)

A.2 SCOPE

This document is intended for use by applicants for mining permits and prospecting rights.
Typically, operations in this sector of the mining industry:

- Use little or no chemicals to extract mineral from ore,
- Work on portions of land of 1,5 hectares in size or smaller,
- Disturb the topography of an area somewhat but have no significant impact on the geology

A.3 PURPOSE

This document aims to:

- Provide a national standard for the submission of Environmental Management Plans for the types of applications mentioned above.
- Ensure compliance with Regulation 52 of the MPRDA.
- Assist applicants by providing the information that the Department of Minerals and Energy (DME) requires in a simple language and in a structured, prescribed format, as contemplated in Regulation 52 (2) of the (MPRDA).
- Assist regional offices of the DME to obtain enough information about a proposed prospecting/ reconnaissance or mining permit operation to assess the possible environmental impacts from that operation and to determine corrective action even before such right is granted and the operation commences.

This document aims both to provide the DME regional offices with enough information about applicants for mining permits and applicants with guidance on environmental management matters pertaining to the mitigation of environmental impacts arising from their operations. Given this dual focus and the generic nature of the document, it might not be sufficient for all types of operations under various circumstances.
The document may therefore be altered or added to as the particular circumstances of the application in question may require.

A.4 USE OF THE DOCUMENT:

This document is designed for use by non-professionals and newcomers to the environmental management industry and it incorporates a *very simple* Environmental Impact Assessment (EIA). The EIA is contained in Section C of this document and was designed specifically with the target sectors of the mining industry (described in A.2 above) in mind.

The aim is ultimately to (a) gather information from applicants themselves; (b) to assess the impact of the operation based on that information and then (c) to guide the applicant to mitigate environmental impacts to limit damage to the environment.

Section B of the document gathers demographic information about the applicant. Section C gathers the information that will be used in the Environmental Impact Assessment. The applicant must complete the relevant sections of this document, but the regional office of the DME will do the scoring of these for the impact assessment rating in Section D.

Section F (the Environmental Management Plan) of the document is prescriptive and gives guidance to the miner or prospector on how to limit the damage of the operation on the environment. This part may be added to by the regional manager, who has the prerogative to decide whether this Environmental Management Plan will adequately address the environmental impacts expected from the operation or whether additional requirements for proper environmental management need to be set. Where these additional requirements are set, they will appear in Section G of this document. The Environmental Management Plan (Section F) of the document is legally binding once approved and, in the undertaking contained in Section H, the applicant effectively agrees to implement all the measures outlined in this Environmental Management Plan.

A.5 LEGISLATION/ REGULATIONS

The relevant sections of Mineral and Petroleum Resources Development Act and its supporting Regulations are *summarised below* for the information of applicants. The onus is on the applicant to familiarise him/herself with the provisions of the full version of the Mineral and Petroleum Resources Development Act and its Regulations.

Section of Act	**Legislated Activity/ Instruction/ Responsibility or failure to comply**	**Penalty in terms of Section 99**
5(4)	No person may prospect, mine, or undertake reconnaissance operations or any other activity without an approved EMP, right, permit or permission or without notifying land owner	R 100 000 or two years imprisonment or both
19	Holder of a Prospecting right must: lodge right with Mining Titles Office within 30 days; commence with prospecting within 120 days, comply with terms and conditions of prospecting right, continuously and actively conduct prospecting operations; comply with requirements of approved EMP, pay prospecting fees and royalties	R 100 000 or two years imprisonment or both
20(2)	Holder of prospecting right must obtain Minister's permission to remove any mineral or bulk samples	R 100 000 or two years imprisonment or both
Section of Act	**Legislated Activity/ Instruction/ Responsibility or failure to comply**	**Penalty in terms of Section 99**
26(3)	A person who intends to beneficiate any mineral mined in SA outside the borders of SA may only do so after notifying the Minister in writing and after consultation with the Minister.	R 500 000 for each day of contravention

28	Holder of a mining right or permit must keep records of operations and financial records AND must submit to the DG: monthly returns, annual financial report and a report detailing compliance with social & labour plan and charter	R 100 000 or two years imprisonment or both
29	Minister may direct owner of land or holder/applicant of permit/right to submit data or information	R 10 000
38(1)(c)	Holder of permission/permit/right MUST manage environmental impacts according to EMP and as ongoing part of the operations	R 500 000 or ten years imprisonment or both.
42(1)	Residue stockpiles must be managed in prescribed manner on a site demarcated in the EMP	A fine or imprisonment of up to six months or both
42(2)	No person may temporarily or permanently deposit residue on any other site than that demarcated and indicated in the EMP	A fine or imprisonment of up to six months or both
44	When any permit/right/permission lapses, the holder may not remove or demolish buildings, which may not be demolished in terms of any other law, which has been identified by the Minister or which is to be retained by agreement with the landowner.	Penalty that may be imposed by Magistrate's Court for similar offence
92	Authorised persons may enter mining sites and require holder of permit to produce documents/ reports/ or any material deemed necessary for inspection	Penalty as may be imposed for perjury
94	No person may obstruct or hinder an authorised person in the performance of their duties or powers under the Act.	Penalty as may be imposed for perjury
95	Holder of a permit/right may not subject employees to occupational detriment on account of employee disclosing evidence or information to authorised person (official)	Penalty as may be imposed for perjury
All sections	Inaccurate, incorrect or misleading information	A fine or imprisonment of up to six months or both
All sections	Failure to comply with any directive, notice, suspension, order, instruction, or condition issued	A fine or imprisonment of up to six months or both

A.6 OTHER RELEVANT LEGISLATION

Compliance with the provisions of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) and its Regulations does not necessarily guarantee that the applicant is in compliance with other Regulations and legislation. Other legislation that may be immediately applicable includes, but is not limited to:

- National Monuments Act, 1969 (Act 28 of 1969).
- National Parks Act, 1976 (Act 57 of 1976)
- Environmental Conservation Act, 1989 (Act 73 of 1989)
- National Environmental Management Act, 1998 (Act No. 107 of 1998)
- Atmospheric Pollution Prevention Act, 1965 (Act 45 of 1965)
- The National Water Act, 1998 (Act 36 of 1998)
- Mine Safety and Health Act, 1996 (Act 29 of 1996)
- The Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983).

A.7 WORD DEFINITIONS

In this document, unless otherwise indicated, the following words will have the meanings as indicated here:

Act (The Act)	Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002)
Borehole	A hole drilled for the purposes of prospecting i.e. extracting a sample of soil or rock chips by pneumatic, reverse air circulation percussion drilling, or any other type of probe entering the surface of the soil.
CARA	The Conservation of Agricultural Resources Act
EIA	An Environmental Impact Assessment as contemplated in Section 38(1) (b) of the Act
EMP	an Environmental Management Plan as contemplated in Section 39 of the Act
Fauna	All living biological creatures, usually capable of motion, including insects and predominantly of protein-based consistency.
Flora	All living plants, grasses, shrubs, trees, etc., usually incapable of easy natural motion and capable of photosynthesis.
Fence	A physical barrier in the form of posts and barbed wire and/or "Silex" or any other concrete construction, ("palisade"- type fencing included), constructed with the purpose of keeping humans and animals within or out of defined boundaries.
House	any residential dwelling of any type, style or description that is used as a residence by any human being
NDA	National Department of Agriculture
NWA	National Water Act, Act 36 of 1998
Pit	Any open excavation
"Porrel"	The term used for the sludge created at alluvial diamond diggings where the alluvial gravels are washed and the diamonds separated in a water-and-sand medium.
Topsoil	The layer of soil covering the earth which- (a) provides a suitable environment for the germination of seed; (b) allows the penetration of water; (c) is a source of micro-organisms, plant nutrients and in some cases seed; and (d) is not of a depth of more than 0,5 metres or such depth as the Minister may prescribe for a specific prospecting or exploration area or mining area.
Trench	A type of excavation usually made by digging in a line towards a mechanical excavator and not pivoting the boom – a large, U-shaped hole in the ground, with vertical sides and about 6 – 8 metres in length. Also a prospecting trench.
Vegetation	Any and all forms of plants, see also Fauna
DWAF	The Department of Water Affairs and Forestry – both national office and their various regional offices, which are divided across the country on the basis of water catchment areas.
MPRDA	the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002)
EMPlan	An Environmental Management Plan as contemplated in Regulation 52 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) – this document.

B. BIOGRAPHIC DETAILS OF THE APPLICANT:

B 1.1 Full name (and surname) of person or company applying for permit or right	*De Beers Consolidated Mines Limited*
B 1.2 ID number of person or company/ CC registration number	*1888/000007/06*
B 1.3 Postal address	*P O Box 616* *Kimberley* *8300*
B 1.4 Physical/ residential address	*36 Stockdale Street* *Kimberley* *8301*
B 1.5 Applicant's telephone number	*053 839 4248*
B 1.6 Applicant's cellular phone number	*n/a*
B 1.7 Alternative contact's name	*A W Dreyer*
B 1.8 Alternative contact's telephone/cell phone numbers	*053 839 4243*
B 2.1 Full name of the property on which mining/ prospecting operations will be conducted	The farm Jagersfontein 14
B 2.2 Name of the subdivisions	Subdivision 1 (King's Paddock), Subdivision 16 and The Remaining Extent Of the farm Jagersfontein 14
B 2.3 Approximate centre of mining/prospecting area: Longitude	25 ° 25 min 30 sec East
Latitude	29 ° 47 min 00 sec South
B 2.4 Magisterial district	Fauresmith
B 2.5 Name of the registered owner of the property	See attached list o page 25
B 2.6 His/her Telephone number	See attached list o page 25
B 2.7 His/ her Postal address	See attached list o page 25
B 2.8 Current uses of surrounding areas	
Farming: grazing (sheep). *Residential area (Jagersfontein, Itumeleng and Charlesville villages)*	
B 2.9 Are there any other, existing land uses that impact on the environment in the proposed mining / prospecting area?	

Recreation: golf course north of Jagersfontein *Infrastructure: tarred and un-tarred roads, railway line, landing strip, old mine residue deposits* *Industry: a small brickworks south-east of Jagersfontein*
B 2.10 What is the name of the nearest town?
Jagersfontein, Itumeleng and Charlesville villages, surrounded by the area. *Fauresmith is approximately 12km to the west.*

B 3 Project Description

This project description tabulated below is a summary of the Prospecting Work Programme submitted in support of this application. For all phases of prospecting described, accommodation, vehicle maintenance, offices, laboratories and other support requirements will be handled off-site using existing commercial or in-house facilities. Locations of planned activities can NOT be shown on a plan as they will be dependant on the outcome of the initial geophysical survey work (first phase of physical prospecting) to be conducted over the property.

Time schedule	Phase of prospecting activities	Activity	Supporting activities on site	Estimated duration
Year 1	1	Desk top studies	Off site	1 month
	2	Ground geophysical (gravity) surveying over sites of possible kimberlite occurrence (target delineation)	Access by LDVs on existing tracks.	5 weeks
	3	Desk top studies,data processing, interpretation, planning	Off site	2 weeks
	4a	Small diameter (c 165mm diameter) exploratory percussion drilling and/or minor pitting/trenching (testing of targets)	Access by drill rigs & support vehicles on existing tracks, short distances off track. Temporary portable ablutions.	3 weeks
	4b	Investigation and identification of drill chip samples	Laboratory work off site	2 months
	5	Desk top studies,data processing, interpretation, planning	Off site	2 months
	6a	Detailed geophysical surveying using various techniques (delineation of kimberlites)	Access by LDVs on existing tracks.	4 weeks
	6b	Small diameter (c 165mm diameter) second stage percussion and core drilling and/or minor pitting/trenching (delineation and initial testing of kimberlites targets)	Access by drill rigs/excavators & support vehicles on existing tracks, short distances off track. Water recirculation for drilling may be required (above surface aqua-dams or sumps). Temporary portable ablutions.	1 month
	6c	Petrographic, geochemical and microdiamond analyses	Laboratory work off site	6 months
Year 2	7	Desk top studies,data processing, interpretation, planning	Off site	3 months
	8a	Pitting/trenching and/or large diameter (c.450mm) sample drilling (bulk sampling). Method(s) to be used will be dependent on kimberlite morphology, overburden and topography. Small diameter drilling as required.	Access by drill rigs/excavators & support vehicles on existing tracks, creation of new tracks may be required. Water recirculation for drilling will be required (above surface aqua-dams or sumps). Temporary portable ablutions.	2 months
	8b	Kimberlite sample treatment	Laboratory work off site	3 months
	8c	Sample concentrate sorting	Laboratory work off site	4 months
	9	Desk top studies,data processing, interpretation, planning	Off site	3 months
	10a	Pitting/trenching and/or large diameter (c.450mm) sample drilling (evaluation sampling). Small diameter drilling as required.	Access by drill rigs/excavators & support vehicles on existing tracks, creation of new tracks may be required. Water recirculation for drilling may be required (above surface aqua-dams or sumps). Temporary portable ablutions.	4 months
	10b	Kimberlite sample treatment	Laboratory work off site	4 months
Year 4	10c	Sample concentrate sorting & diamond studies	Laboratory work off site	12 months
Year 5	11	Desk top studies,data processing, interpretation, planning (pre-feasibility studies)	Off site	3 months
Year 6 onwards	12	Mining feasibility studies	Off site	>18 months
	13	Detailed drilling, sampling, geological modelling and ore dressing studies	Some laboratory and desktop work off site. Access by drill rigs using tracks created for phase 8a. Water recirculation for drilling may be required (above surface aqua-dams or sumps). Temporary portable ablutions.	

REGIONAL MANAGER:

C. ENVIRONMENTAL IMPACT ASSESSMENT:

The information provided in this section will enable officials to determine how serious the impact of the prospecting/mining operation will be.

DESCRIBE THE ENVIRONMENT THAT WILL BE AFFECTED BY THE PROPOSED PROSPECTING/MINING OPERATIONS UNDER THE FOLLOWING HEADINGS:

C.1 DESCRIPTION OF THE ENVIRONMENT LIKELY TO BE AFFECTED BY PROPOSED PROSPECTING/MINING OPERATIONS: (REGULATION 52(2)(a))			
ENVIRONMENTAL ELEMENT/ IMPACTOR	VALUE	TICK	OFFICE USE
C 1.1 What does the landscape surrounding the proposed operation look like? (Open veldt/ valley/ flowing landscape/ steep slopes)			
Most of the application area is located in a broad gentle valley, with steeper slopes to the north, north-east and west where the ground rises to ridges. There are also several dolerite koppies within the valley. The mean elevation of the area applied for is approximately 1460 m.a.s.l. with the highest points in the north-east being 1540 m.a.s.l and the lowest point on the northern boundary being just below 1365 m.a.s.l. Refer to 1:50,000 topographic map sheets 2925CB and CD.			
C 1.2 Describe the type of soil found on the surface of the site			
The soil is described as being dominated by prismacutanic and/or pedocutanic horizons, with a mainly red B horizon (code Da46 and Da104) in the central, lower part of the area and on the flatter dolerite areas. Glenroasa and/or Mispah forms with lime rare or absent occur on the higher ground in the north-eastern and western parts of the area (codes Fb191 and Fb400). On the steeper, rocky slopes in the north-eastern part of the area, soil is thin and is described as miscellaneous (code Ib348).	VALUE	TICK	OFFICE USE
C 1.3 How deep is the topsoil?	0 – 300mm	√	8
Soil depths are described as less than 450 mm..	300 – 600mm		4
	600mm +		2

REGIONAL MANAGER:
MINERAL REGULATION
FREE STATE REGION

C 1.4 What *plants, trees and grasses* grow naturally in the area around the site?

Most of the area has been transformed from the natural vegetation types by historical mining, infrastructure or grazing.

For the central part of the area, the natural vegetation is Xhariep Karroid Grassland (code Gh3), rated as Least Threatened.

Important Taxa:

Graminoids: *Aristida adscensionis, A. canescens, A. congesta, Chloris virgata, Cynodon incompletes, Eragrostis chloromelas, E. lehmanniana, E. obtuse, Fingerhutia Africana, Panicum coloratum, P. stapfianum, Themeda triandra, Tragus koelerioides, Aristida diffusa, Cymbopogon pospischilii, Digitaria eriantha, Eragrostis curvula, Sporobolus fimbriatus.*

Herbs: *Gazania krebsiana, Convolvulus boedeckerianus, Dimorphotheca zeyheri, Hermannia coccocarpa, Indigofera alternans, Lepedium africanum, Lessertia pauciflora, Rumex lanceolatus, Salvia stenophylla, Selago densiflora.*

Geophytic Herbs: *Moraea pallida, Oxalis depressa.*

Succulaent Herb*: Tripteris aghillana var. integrifolia.*

Low Shrubs: *Chrysocoma ciliate, Eriocephalus ericoides, E. spinescens, Felicia filifolia, F. muricata, Pentzia globosa, P. incana, Amphiglossa triflora, Aptosimum elongatum, Atriplex semibaccata var. appendiculata, Berkheya annectens, Gnidia polycephala, Helichrysum asperum var. albidulum, H. dregeanum, H. lucilioides, Lycum cinerum, Melolobium candicans, Nenax microphylla, Oligomeris dregeana, Osteospermum spinescens, Rosenia humilis, Selago saxatilis, Wahlenbergia albens, W. nodosa.*

Succulent Shrubs*: Euphorbia clavarioides, Hetia pallens, Ruschia hamata, R. rigida, Salsola calluna, S. glabrescens.*

Tall Shrub: *Rhus ciliate.*

Endemic Taxa:

Herb: *Manulea flanaganii*

Succulent Shrubs: *Phyllobolus rabeiei, Ruschia calcarea*

For the higher ground on dolerites in the northern, eastern and western parts of the area, the natural vegetation is Besemkaree Koppies Shrubland (code Gh4), rated as Least Threatened.

Important Taxa:

Small Trees: Cussonia paniculata, Ziziphus mucronata.

Tall Shrubs: Diospyros austro-africana, Euclea crispa subsp. ovata, Olea europaea subsp. africana, Rhus burchellii, R. ciliate, Buddleja salinga, Diospyros lycioides, Ehretia rigida, Grewia occidentalis, Gymnosporia polyacantha, Tarchonanthus minor.

Low Shrubs: *Asparagus suaveolens, Chrysocoma ciliate, Amphiglossa triflora, Aptosimum elongatum, Asparagus striatus, Diospyrus pallens, Eriocephalus ericoides, E. spinescens, Euryops empetrifolius, Felicia filifolia, F. muricata, Helichrysum dregeanum, H. lucilioides, Hermannia multiflora, H. vestita, Lantana rugosa, Limeum aethiopicum, Lycium cinereum, Melobium candicans, M. microphyllum, Nenax microphylla, Pegolettia retrofracta, Pentzia globosa, Rhigozum obovatum, Selago saxatilis, Stachys linearis, S. rugosa, Sutera halimifolia, Wahlenbergia albens.*

Succulent Shrubs: Aloe broomii, Chasmatophyllum musculinum, C. verdoorniae, Cotyledon orbiculata var. dactylopsis, Pachypodium succulentum.

Graminoids: *Aristida adscensionis, A. congesta, A. diffusa, Cenchrus ciliaris, Cymbopogon caesius, Cynodon incompletus, Digitaria eriantha, Eragrostis curvula, E. lehmanniana, Heteropogon contortus, Setaria lindenbergiana, Themeda triandra, Tragus koelerioides, Cymbopogon pospischilii, Enneapogon scoparius, Eragrostis chloromelas,*

E. obtuse, Eustachys paspaloides, Fingerhuthia africana, Hyparrhenia hirta, Sporobolus fimbriatus.

Herbs: Convolvulus sagittatus, Dianthus caespitosus, Gazania krebsiana, Hibiscus pusillus, Indigofera alternans, I. rhytidocarpa, Lepidium africanum, Pollichia campestris.

Herbaceous Climber: *Argyrolobium lanceolatum.*

Geophytic Herbs: *Albuca setosa, Asplenium cordatum, Cheilanthes bergiana, C. eckloniana, Freesia andersoniae, Haemanthus humilis, Oxalis depressa, Pellaea calomelanos.*

Succulent Herbs: *Aloe grandidentata, Crassula nudicaulis, Duvalia caespitosa, Euphorbia pulvinata, Huernia piersii, Stapelia grandiflora, S. olivacea, Tridentea gemmiflora.*

Endemic Taxa:

Small Tree: *Cussonia sp. nov. (P.J. du Preez 3666 BLFU).*

Succulent Shrubs: *Euphorbia crassipes, Neohenricia sibbettii, N. spiculata.*

The above list is applicable to the vegetation types as a whole, thus it is not known whether the particular species are found in the area applied for.

The planned prospecting is unlikely to have a significant additional impact on natural vegetation, due to its limited footprint and duration.

Source:
Mucina, L. and Rutherford, M.C. (eds) 2006. The Vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19. South African National Biodiversity Institute, Pretoria.

C 1.5 What *animals* naturally occur in the area?

Naturally, the area would support a large variety of grazers found in the region, but due to the human activities in the area, can now be expected to support reptiles (snakes & lizards), birds, smaller mammals with an affinity for such terrain (e.g. baboons, small buck) and associated predators/scavengers (e.g. jackal).

The following Red Data Birds are listed for the relevant quarter degree sheets (2925 CB and CD) as a whole and it is not known whether these species would be expected on the particular property.

Vulnerable:
Cape Vulture, Tawny Eagle, Martial Eagle, Lesser Kestrel, Blue Crane, Kori Bustard, Ludwig's Bustard.

The planned prospecting is unlikely to have a significant additional impact on these birds & animals, due to its limited footprint and duration.

Reference: Barnes, K.N. (ed.) 2000. The Eskom Red Data Book of Birds of South Africa, Lesotho and Swaziland. Birdlife South Africa, Johannesburg.

	VALUE	TICK	OFFICE USE
C 1.6 Are there any *protected areas* (game parks/nature reserves, monuments, etc) close to the proposed operation?	Yes		4
	No	√	0

C 1.7 What mineral are you going to prospect ~~or mine~~ for?	Diamonds

C 1.8 Describe the type of equipment that will be used:

4x4 LDVs to access the area, various portable (man carried) geophysical surveying instruments, possibly truck mounted drill rigs and ancillary equipment, possibly light earthmoving equipment, possibly skid mounted core drill rigs and ancillary equipment; see Appendix 1.

C.2 HOW WILL THE PROPOSED OPERATION IMPACT ON THE *NATURAL* ENVIRONMENT? (REGULATION 52(2)(b))

Please read this section in conjunction with Appendix 1 which contains a description of diamond exploration techniques to be used together with an assessment of their impact on the natural environment.

ENVIRONMENTAL ELEMENT/ IMPACTOR	VALUE	TICK	OFFICE USE
C 2.1 What will the ultimate depth of the proposed prospecting/~~mining~~ operations be?	0 – 5m		2
Pitting/trenching if required, is unlikely to exceed 10m whilst drilling could exceed depths of 100m.	6 – 10m	√	4
	10 – 25m		8
	25m +		10
C 2.2 How large will the *total* area of all excavations be?		0.5	ha
Should this exercise extend into pitting/ trenching or drilling the total area of all excavations is estimated not to exceed c 5000m²			
C 2.3 How large will each excavation be before it is filled up?	<10 X 10m		2
If excavated, each pit or trench including an access ramp will not exceed 240m². Small diameter drill holes will be <165mm diameter each and large diameter drill holes, c 450mm diameter each.	<20 X 20m	√	4
	>20 X 20m		8
C 2.4 How many *prospecting* boreholes or trenches will there be?	*See Appendix 1. The number required cannot be accurately predetermined and will depend on the nature of the target to be investigated. Current estimates are that up to 6 small diameter drill holes, 2 pits or trenches and/or 6 large diameter drill holes will be required. To be determined once initial results obtained, will be included in the progress report.*		

	VALUE	TICK	OFFICE USE
C 2.5 Will employees prepare food on the site and collect firewood?	Yes		4
Suitable formal accommodation is available in the area so this is not necessary.	No	√	0

C 2.6 Will water be extracted from a river, stream, dam or pan for use by the proposed operation?	Yes		4
	No	√	2
C 2.7 If so, what is the name of this water body?			
C 2.8 If water will not be extracted from an open surface source, where will it be obtained?	*Borehole or Municipal water to be trucked in*		
	VALUE	**TICK**	**OFFICE USE**
C 2.9 How much water per day will the *mineral processing* operation require?	1000 – 10 000 Litres	√	2
Water will only be required for mineral processing if the work programme advances to the phase where large diameter drill sampling is undertaken. In this event, water will be required for the initial de-sliming of drill chip samples as the remainder of the sample treatment will take place away from the drill site (see Appendix 1). The amount of water required is unknown and is dependent on whether the drill holes intersect water. However, it is estimated that c 5000l of water will be required per large diameter drill hole to initiate the water recycling process. Each large diameter drill hole will take several days to complete. The water will be obtained from existing boreholes with the landowner's/occupier's permission or from a municipal source with the landowner's/occupier's permission.	20 000 – 40 000 L		3
	40 000 – 60 000 L		5
	60 000 – 100 000L		8
	More		10
C 2.10 How far is the proposed operation from open water (dam, river, pan, lake)?	0 – 15m		8
Two non-perennial streams drain out of the property to the south-east. The tributaries of these originate on the high ground within or just outside the property and have been channelised and dammed on a small scale in places. There are thus numerous (eight mapped) small non-perennial dams on the property. Although geophysical surveying may cover some of the dams and streams, this will cause no disturbance. There should be no need to drill or create excavations within 60 metres of any of these. (Ref. 1:50,000 scale topographic sheets 2925 CB and CD).	16 – 30m		6
	31 – 60m		4
	More than 60 metres	√	2
C 2.11 What is the estimated depth of the water table/ borehole?	*Based on historical drilling, the depth of the water table is variable. The estimated borehole depth is no more than 150 metres.*		8 to 42 metres

C 2.12 How much water per day will the proposed operation utilize *for employees*? *Water for drinking purposes will be brought onto site and would be a maximum of 50 litres per day.*	*c 50*		Litres
C 2.13 What toilet facilities will be made available to workers?	None		8
Due to the very short time taken for geophysical surveying, no toilet facilities need be provided, however should the project progress to pitting/ trenching and/or drilling, chemical toilets will be provided. Only if this proved impractical would pit latrines be used.	Pit latrine (longdrop)		4
	Chemical toilet	√	2
C 2.14 Would it be necessary to construct roads to access the proposed operations?	Yes	√	4
Geophysical surveying is largely done on foot and will not require access roads to be built. Access to the farm will be via existing roads and rough tracks. ***It is not possible to predetermine whether the work programme will advance to a phase requiring pitting/trenching and/or drilling and, thus, it is not possible to predetermine whether the site for these activities will require the construction of access roads(tracks) in advance (see Appendix 1).*** *Should the project progress to phases requiring pitting/trenching and/or drilling, tracks may need to be cleared to allow for vehicular access. This will be done as set out in section F2.2.1*	No		0
C 2.15 How long will these access road(s) be (from a public road to the proposed operations)	0 – 0,5 km		4
It is not possible to predetermine whether the work programme will advance to a phase requiring pitting/trenching and/or drilling and, thus, it is not possible to predetermine the route for any access roads (tracks), (see Appendix 1). *If a road is necessary the length of the road will depend on the location of the work site. The road will be the shortest possible distance from the public roads or existing farm tracks. There are several existing roads and tracks on the area, so the distance required for a new track should not exceed 2.5km.*	0,6 – 1,5 km		2
	1,6 – 3 km	√	4
C 2.16 Will trees be uprooted to construct these access road(s)?	Yes		4
If an access road is necessary no trees larger than 3m will be uprooted. However, it should be possible to avoid all trees as there are relatively few in the area.	No	√	0
C 2.17 Will any foreign material, like crushed stone, limestone, or any material other than the naturally occurring topsoil be placed on the road surface?	Yes		4

Topsoil will not be used for any road capping as it will be stored for rehabilitation of any small borrow pits made.	No	√	0
C.3 TIME FACTOR			
C 3.1 For what time period will prospecting/mining operations be conducted on this particular site?	0 – 6 months		2
The prospecting operation is conducted in phases as indicated in Appendix 1. In this case, the initial phase, geophysical surveying, will take no longer than a few days. If the project matures to drilling, pitting and/or trenching, these may take up to 3 months. The entire physical prospecting activities within the work programme, possibly extending over an 8 year period, are unlikely to exceed 18 months.	6 – 12 months		4
	12 – 18 months	√	6
	18 – 24 months		8
	>24 months		10

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C.4 HOW WILL THE PROPOSED OPERATION IMPACT ON THE *SOCIO-ECONOMIC ENVIRONMENT*? (REGULATION 52(2)(b))			
ELEMENT/ IMPACTOR	VALUE	TICK	OFFICE USE
C 4.1 How many people will be employed?	• 10		
Is dependent on the phase of the work programme being executed. Estimated maximum is 10 during pitting/trenching and or drilling.			
C 4.2 How many men?	• 8*(Estimate)*		
C 4.3 How many women?	• 2*(Estimate)*		
C 4.4 Where will employees be obtained? (Own or employed from local communities?)	Own	√	2
It is likely that some additional temporary employees will need to be sourced from local communities. However this will depend on how the project develops.	Local		4
C 4.5 How many hours per day will employees work?	Sunrise→ Sunset	√	4
	Less		2
	More		8
	VALUE	TICK	OFFICE USE
C 4.6 Will operations be conducted within 1 kilometre from a residential area	Yes	√	6
There are houses adjacent to the property. Initial geophysical surveying will be within 1 km of these residences but these activities have a duration of no more than a few days and will cause little (but more probably no) disturbance to residents. ***It is not possible to predetermine whether the work programme will advance to phases requiring pitting/trenching and/or drilling and, thus, it is not possible to predetermine the site for these activities relative to residential areas (see Appendix 1). However, pitting/trenching and/or drilling would be undertaken as far away from residential areas as possible.*** *The actual distances from residences will be included in the progress report.*	No		1
C 4.7 How far will the proposed operation be from the nearest fence/windmill/house/dam/built structure?	0 – 50 metres		8
Initial geophysical surveying may be close to one of the abovementioned structures but these activities have no impact on the structures. Such structures are generally avoided to ensure the integrity of data. ***It is not possible to predetermine whether the work programme will advance to phases requiring pitting/trenching and/or drilling and, thus, it is not possible to predetermine the***	51 – 100 metres	√	4

site for these activities relative to the above mentioned structures (see Appendix 1). However, pitting/trenching and/or drilling would be undertaken as far away from the above mentioned structures as possible. Given the nature of the area it is likely that most activities will be at least 50m from structures. *The actual distances from the above mentioned structures will be included in the progress report*			
	150 or more metres		2
C 4.8 Comments from interested and affected parties regarding impacts on the socio-economic environment.	No comments available.		
C.5 HOW WILL THE PROPOSED OPERATION IMPACT ON THE *CULTURAL HERITAGE* OF THE SURROUNDING ENVIRONMENT? REGULATION 52(2)(b)			
ELEMENT/ IMPACTOR	**VALUE**	**TICK**	**OFFICE USE**
C 5.1 Are there any graveyards or old houses or sites of historic significance within 1 kilometre of the area?	Yes	√	8
There are old houses present, although their ages are unknown and it is expected that graves are present near these (although none are marked on the topographic map). Initial geophysical surveying may be within 50m of a house and/or grave but these activities have no impact. ***It is not possible to predetermine whether the work programme will advance to phases requiring pitting/trenching and/or drilling and, thus, it is not possible to predetermine the site for these activities relative to the above mentioned occurrences (see Appendix 1). However, pitting/trenching and/or drilling would be undertaken as far away from the above mentioned occurrences as possible.*** *The actual distances from the above mentioned structures, if found to be present, will be included in the progress report.* ***It is suggested that an Archaelogical Impact Assessment be performed for specific sites, if and when the project progresses to pitting or trenching.***	No		0
C 5.2 Comments from interested and affected parties regarding impacts on the cultural environment.	No comments available.		

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C.6 SPECIFIC REGULATORY REQUIREMENTS

C.6.1 Air quality Management and Control (Regulation 64)
Describe how the operation will impact on the quality of the air, taking into account predominant wind direction and other affected parties in the downwind zone:

There will be minimal impact on the air quality. The only possible air pollution that could occur is dust from accessing the site and from the use of equipment, and emissions from vehicles. Dust will be reduced through wetting access roads when and if necessary. Vehicle emissions will be tested on a regular basis to ensure that these are below the limit listed in the Atmospheric Pollution Prevention Act,

C.6.2 Fire Prevention (Regulation 65)
Applicants for permits, rights or permissions involving ***coal or bituminous rock*** must:

- ***Indicate on a plan*** where the coal or rock discard dump will be located
  (If applied for a permit to mine or prospect for coal or bituminous rock, indicate the exact location of the discard dump on the plan and write" EMPlan C6.2" next to it)

Not applicable

C.6.3 Noise control (Regulation 66)
Indicate how much noise the operation will generate, and how it will impact on the surrounding environment, who might be influenced by noise from your operation.

The initial phase of surveying will not generate any noise other than that of the LDVs used to access the sites, however trenching, pitting and/or drilling may result in some noise from vehicles and machinery. Given the short duration of any one phase the noise will be limited, it will also be limited to operating (daylight) hours only. Employees working close to equipment that generates a noise above 65 dB will wear the appropriate personal protective equipment.

C.6.4 Blasting, vibration and shock (Regulation 67)
Please indicate whether any blasting operations will be conducted.

Blasting: ~~Yes/~~ **No**	How often?

C.6.5 Disposal of waste material (Regulation 69)
Indicate on your plan where waste will be dumped in relation to the beneficiation works/ washing pans. Also indicate below how domestic waste material will be managed.

In the case of surveying there will not be any waste generated on site. In the event of pitting, trenching or drilling the waste will be dealt with as follows:

General/domestic waste – Any domestic waste will be taken back to the closest camp site where it will be separated into recyclable waste and non-recyclable waste. The recyclable waste will be recycled and the non-recyclable waste will be taken to the local municipal landfill site.

C.6.6 Soil pollution and erosion control (Regulation 70)
6.6.1 Indicate how topsoil will be handled on the area.

In the case of pitting, trenching and/or drilling, the topsoil will be removed and stockpiled for use in the rehabilitation of the site. Topsoil will be stored as required in section F2.1

6.6.2 Describe how spills of oil, grease, diesel, acid or hydraulic fluid will be dealt with.

PVC sheeting will be placed under any machinery on site that has the potential to develop an oil leak. Should there be an oil leak onto the PVC sheeting this will be cleaned up and the cleaning material sent for bioremediation or proper disposal. Drip trays will be used to collect oils and fluids from any

emergency on-site servicing and repair of machinery and vehicles. Only emergency servicing will be permitted on site. All old oil will be removed for recycling or proper disposal. Should there be a spill of hydrocarbons onto the soil, the contaminated soil will be cleaned up and sent for bioremediation or proper disposal (as hazardous waste).
6.6.3 Briefly describe the storage facilities available for the above fluids:
Storage will be short-term (for the duration of the activity for which they are required only). All oil containers kept on site, if any, will be kept in drip trays and stored in a demarcated area with minimal pedestrian activity allowed to minimize the chance of the containers being knocked over. They will also be kept under cover to prevent contamination by rain water.

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C.6.7 If significant impacts on any element of the environment mentioned in Section C 1 to C 6.6 above have been identified, summarise all of them here: (Regulation 52(2)(c)) (Numbers as per items in table under B 3 above)	C.6.8 How will the negative impacts on the environment be mitigated or managed? (Regulation 57(2)(c))	C 6.9 Annual management and concurrent rehabilitation cost	C 6.10 Final rehabilitation cost
2) Ground geophysical surveying No appreciable impact	**2) Ground geophysical surveying** No action required	**2) Ground geophysical surveying** Nil	**2) Ground geophysical surveying** Nil
4a & 6b) Small diameter drilling Soil – potential oil pollution Vegetation – destruction through clearing or fire Ground water –potential oil pollution Surface water – possible pollution by spills Air quality – limited dust creation for short duration (insignificant) Noise – of short duration (insignificant) Land use – no permanent change (insignificant) Animal Life – minor disturbance for limited time & extent (insignificant) IAPs – minor temporary disturbance to activities (insignificant)	**4a & 6b) Small diameter drilling** Spills of oil or fuel (affecting soil, surface & ground water): Minimising - by equipment maintenance and procedure Remedial – containment using tarpaulins and clean up using spill kits. Vegetation impact (crushing/clearing): Minimising – keep drill area to a minimum, limit off-road driving Remedial – drill site rehabilitation (topsoil return to promote regrowth). Vegetation impact (fire): Avoidance – equipment maintenance, no fires allowed on site Remedial – fire extinguishers & beaters to be on site	**4a & 6b) Small diameter drilling** Approx. R 18,000 combined based on increased equipment, training & labour costs	**4a & 6b) Small diameter drilling** Approx. R 12,000

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8a & 10a) Large diameter drilling, Pitting/trenching Soil – potential oil pollution, compaction along tracks Vegetation – destruction through clearing or fire Ground water –potential oil pollution Surface water – possible pollution by spills Air quality – limited dust creation for short duration (insignificant) Noise – of short duration (insignificant) Land use – no permanent change (insignificant) Animal Life – minor disturbance for limited time & extent (insignificant) IAPs – minor temporary disturbance to activities (insignificant)	**8a & 10a) Large diameter drilling, Pitting/trenching** Spills of oil or fuel (affecting soil, surface & ground water): Minimising - by equipment maintenance and procedure Remedial – containment using tarpaulins and clean up using spill kits. Vegetation impact (crushing/clearing): Minimising – keep drill/excavtation area to a minimum, limit off-road driving Remedial – drill/excavation site rehabilitation (topsoil return to promote regrowth). Vegetation impact (fire): Avoidance – equipment maintenance, no fires allowed on site Remedial – fire extinguishers & beaters to be on site Soil compacting on access tracks: Minimising – limit track development, use short routes. Remedial – rip tracks after project completion	**8a & 10a) Large diameter drilling, pitting/trenching** Phase 8a : Approx. R 20,000 based on increased equipment, training & labour costs Phase 10a : Approx. R 100,000 based on increased equipment, training & labour costs	**8a & 10a) Large diameter drilling, pitting/trenching** Phase 8a : approx. R 16,000 Phase 10 a: approx R 80,000
TOTAL **(up to end Phase 8a, years 1 & 2)**			**R 28,000**
TOTAL **(up to end Phase 10a, years 1 – 3)**			**R 108,000**

C.7 Financial provision: (Regulation 54)

The amount that is necessary for the rehabilitation of damage caused by the operation, both after sudden closure during the normal operation of the project and at final, planned closure will be estimated by the regional office of the DME, based on the information supplied in this document. This amount will reflect how much it will cost the Department to rehabilitate the area disturbed in case of liquidation or abscondence.

Enter the amount of financial provision required here: R28 000 (for years 1 and 2, see above)

What method will be used to furnish DME with this financial provision?

Cash deposit	
Existing Guarantee M403430 (Standard Bank) for an amount of R20 000.00. To be replaced with a new guarantee when requested.	√
Trust Fund	
Other: (specify) (Note: other methods must be approved by the Minister)	

The standard formats for each of these types of guarantees are available from your regional office of the DME.

C.8.1 Monitoring and performance assessment.

Regulation 55 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) clearly describes the process and procedure as well as requirements for monitoring and auditing of the performance of this plan to adequately address environmental impacts from the operation. The following information must be provided:

C.8.2 Please describe how the adequacy of this programme will be assessed and how any inadequacies will be addressed. (Regulations 55(1) and 52(2)(e))
Example: I will, on a bi-monthly basis, check every aspect of my operation against the prescriptions given in Section F of this document and, if I find that certain aspects are not addressed or impacts on the environment are not mitigated properly, I will rectify the identified inadequacies immediately.
As part of the internal Environmental Management System (EMS) all employees and contractors receive environmental induction, environmental awareness is reinforced through regular toolbox talks. The EMS includes monitoring and reporting requirements, the purpose being to monitor the impact on the environment. The Geologist responsible for the project will check all aspects of the operation against both the requirements of the EMS and the prescriptions in Section F of this document. A non conformance reporting system is in place as part of the EMS, any non conformances will be reported and the appropriate corrective and preventive actions taken.

C.9 Closure and Environmental objectives: (Regulation 52(2)(f)) Clearly state the intended end use for the area prospected/mined after closing of operations
The area will be returned to its original land use. In the event of the discovery of a viable ore body, mining operations will be initiated. This will however require an application for a mining right.

C.9.1 Describe, in brief terms, what the environment will look like after a closure certificate has been obtained.
Provided there is no economically viable ore body discovered, the land will be returned to its original state.

Note: The proposed end-state of your area must be consulted with interested and affected parties in terms of Regulation 52(2)(g). Details of the acceptability of the end-state must appear in the section below.

C 10 CLOSURE

Regulations 56 to 62 outline the entire process of mine closure, and these are copied in Section F of this document, both as a guide to applicants on the process to be followed for mine closure, and also to address the legal responsibility of the applicant with regard to the proper closure of his operation. In terms of Section 37 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002), the holder of a permit is liable for any and all environmental damage or degradation emanating from his/her operation, until a closure certificate is issued in terms of Section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002).

C.11 Public Participation: (Regulation 52(2)(g))

In terms of the above regulation consultation with interested and affected person or persons must take place prior to the approval of the environmental management plan. This regulation is quoted below for ease of reference.

"a record of the public participation undertaken and the results thereof"

C 11.1 Any comments lodged by an interested and affected person or persons in terms of section 10(1)(b) of the Act, must be in writing and addressed to the relevant Regional Manager.

C 11.2 Any objections lodged by an interested and affected person or persons against the application for a right or permit in terms of the Act, must set out clearly and concisely the facts upon which it is based and must be addressed to the relevant Regional Manager in writing.

C 11.3 The Regional Manager must make known by way of publication in a local newspaper or at the office of the Regional Manager, that an application for a right or permit in terms of the Act has been received.

In the table below, please list the names of people or organisations likely to be influenced by the proposed operations (these might include neighbours, other water users, etc.) Kindly

indicate how these people were consulted (e.g. By letter or by phone) *and provide proof* of that consultation. What were the main concerns/ objections raised by the interested and affected parties to the proposed operation?

Name of Interested/ affected party	Contact details: Address & telephone number	How did consultation take place?*	What were his /her main concerns about the operation?
Stephen Haggerty Properties Pty Ltd	P O Box 20292 Willows Bloemfontein 9320		
Kopanong Local Municipality	Mark Sq Jagersfontein 051 7240003		
Leonard Christiaan Marais	P O BOX 12237 BRANDHOF 9324 051 7230113		

IAPs were consulted during the previous Prospecting Permit application process.

D SCORING OF EIA– FOR OFFICIAL USE ONLY

Instructions for officials:
In this table, complete the totals of each section indicated below and do the calculation. ***Remember to first add all the values of sections C 1,2,4 and 5 and then to multiply it by the time factor in Section C 3***
Note that the value for the time factor element of the impact rating appears in Section C3. This is the total amount of time that the operation is expected to impact on the environment and all other factors are MULTIPLIED by this value. Compare the score (Impact rating) with the table below to help you make a decision on the total impact of the operation and also on the sufficiency of this programme to address all expected impacts from the operation on the environment.

D 1.1 CALCULATION TABLE

Section **C 1** Total	+	Section **C 2** Total	+	Section **C 4** Total	+	Section **C 5** Total	=	*Subtotal*	X	Time Factor Section **C 3**	=	Score (Impact rating)
8	+	24	+	17	+	8	=	57	X	6	=	342

26/07/2010

D 1.2 IMPACT RATING SCALE

SCORE ATTAINED	IMPACT RATING	REMARKS
46 – 300	Low	No additional objectives needed – this programme is sufficient
301 - 800	Medium	Some specific additional objectives to address focal areas of concern may be set.
801 - 1160	High	Major revision of Environmental Management Plan for adequacy and full revision of objectives.

Additional Objectives:

Based on the information provided by the applicant and the regional office's assessment thereof, combined with the interpretation of the scoring and impact rating attained for the particular operation above, the Regional Manager of the regional office of the DME may now determine additional objectives /requirements for the mine owner/manager to comply with. *These measures will be specific and will address specific issues of concern that are not adequately covered in the standard version of this document.* These requirements are not listed here, but are specified under Section G of this document, so as to form part of the legally binding part of this Environmental Management Plan.

E UNDERTAKING:

I, IAN NORMAN SCHEEPERS..., on behalf of the applicant for a prospecting right hereby declare that the above information is true, complete and correct. We undertake to implement the measures as described in Section F hereof. We understand that this undertaking is legally binding and that failure to give effect hereto will render us liable for prosecution in terms of Section 98 (b) and 99 (1)(g) of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002). We are also aware that the Regional Manager may, at any time but after consultation with me, make such changes to this plan as he/she may deem necessary. Further, we undertake to consider any specific additional requirements that may be set for the operation by the Regional Manager and, if those additional requirements are agreeable to us, to sign the undertaking comprising Section H of this Environmental Management Plan.

Signed on this 17th day of June 2010 at Kimberley (Place)

.....
Signature of applicant

ASSISTANT SECRETARY
Designation

REGIONAL MANAGER:
MINERAL REGULATION
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F. ENVIRONMENTAL MANAGEMENT PLAN:

INTRODUCTION

This Environmental Management Plan contains guidelines, operating procedures and rehabilitation/pollution control requirements which will be binding on the holder of the mining permit/ prospecting permission/ reconnaissance permission after approval of the Environmental Management Plan. It is essential that this portion be carefully studied, understood, implemented and adhered to at all times.

F 1 GENERAL REQUIREMENTS

F 1.1 MAPPING AND SETTING OUT

F 1.1.1 LAYOUT PLAN

- A copy of the layout plan as provided for in Regulation 2.2 must be available at the prospecting/mining site for scrutiny when required.
- The plan must be updated on a regular basis with regard to the actual progress of the establishment of surface infrastructure, mining operations and rehabilitation (a copy of the updated plan shall be forwarded to the Regional Manager on a regular basis).
- A final layout plan must be submitted at closure of the mine or when operations have ceased.

NOTE: Regulation 2.2 of the regulations promulgated in terms of the Act requires:

"An application contemplated in sub-regulation (1) must be accompanied by a plan that must contain –

(a) the co-ordinates of the land or area applied for;
(b) the north point;
(c) the scale to which the plan has been drawn;
(d) the name, number and location of the land or area covered by the application; and
(e) in relation to farm boundaries and surveyed points-
  (i) the size and shape of the proposed area;
  (ii) the boundaries of the land or area comprising the subject of the application concerned;
  (iii) the layout of the proposed reconnaissance, prospecting, exploration, mining or production operations;
  (iv) surface structures and servitudes;
  (v) the topography of the land or area; "

F 1.1.2 DEMARCATING THE MINING/ PROSPECTING AREA

- The mining/ prospecting area must be clearly demarcated by means of beacons at its corners, and along its boundaries if there is no visibility between the corner beacons.
- Permanent beacons as indicated on the layout plan or as prescribed by the Regional Manager must be firmly erected and maintained in their correct position throughout the life of the operation.
- Mining/ prospecting and resultant operations shall only take place within this demarcated area.

F 1.1.3 DEMARCATING THE RIVER CHANNEL AND RIVERINE ENVIRONMENT

The following is applicable if operations are conducted within the riverine environment (See F 3.2):

- Beacons as indicated on the layout plan or as prescribed by the Regional Manager must be erected and maintained in their correct position throughout the life of the operation.
- These beacons must be of a permanent nature during the operations and must not be easily removable, especially those in a river channel. The beacons must, however, be removed at the end of the operations.
- The mining of and prospecting for any mineral shall only take place within this demarcated mining area.
- If riverine vegetation is present in the form of reeds or wetland vegetation, the presence of these areas must be entered in Part C 1.45 of the EMPlan and indicated on the layout plan.
- The holder of the mining permit/ prospecting right will also be required to permanently demarcate the areas as specified in F 1.1.2.

F 1.2 RESTRICTIONS ON MINING/ PROSPECTING

- On assessment of the application, the Regional Manager may prohibit the conducting of mining or prospecting operations in vegetated areas or over portions of these areas
- In the case of areas that are excluded from mining or prospecting, no operations shall be conducted within 5 m of these areas.

F 1.3 RESPONSIBILITY

- The environment affected by the mining/ prospecting operations shall be rehabilitated by the holder, as far as is practicable, to its natural state or to a predetermined and agreed to standard or land use which conforms with the concept of sustainable development. The affected environment shall be maintained in a stable condition that will not be detrimental to the safety and health of humans and animals and that will not pollute the environment or lead to the degradation thereof.
- It is the responsibility of the holder of the mining permit/ prospecting right to ensure that the manager on the site and the employees are capable of complying with all the statutory requirements which must be met in order to mine, which includes the implementation of this EMP.
- If operations are to be conducted in an area that has already been disturbed, the holder must reach specific agreement with the Regional Manager concerning the responsibilities imposed upon himself/herself pertaining to the rehabilitation of the area and the pollution control measures to be implemented.

F 2 INFRASTRUCTURAL REQUIREMENTS

F 2.1 TOPSOIL

- Topsoil shall be removed from all areas where physical disturbance of the surface will occur.

- All available topsoil shall be removed after consultation with the Regional Manager prior to the commencement of any operations.
- The topsoil removed, shall be stored in a bund wall on the high ground side of the mining/prospecting area outside the 1:50 flood level within the boundaries of the mining area/ prospecting.
- Topsoil shall be kept separate from overburden and shall not be used for building or maintenance of access roads.
- The topsoil stored in the bund wall shall be adequately protected from being blown away or being eroded.

F 2.2 ACCESS TO THE SITE

F 2.2.1 Establishing access roads on the site

- The access road to the mining/prospecting area and the camp-site/site office must be established in consultation with the landowner/tenant and existing roads shall be used as far as practicable.
- Should a portion of the access road be newly constructed the following must be adhered to:

  - The route shall be selected that a minimum number of bushes or trees are felled and existing fence lines shall be followed as far as possible.
  - Water courses and steep gradients shall be avoided as far as is practicable.
  - Adequate drainage and erosion protection in the form of cut-off berms or trenches shall be provided where necessary.

- If imported material is used in the construction or upgrading of the access road this must be listed in C 2.17
- The erection of gates in fence lines and the open or closed status of gates in new and existing positions shall be clarified in consultation with the landowner/tenant and maintained throughout the operational period.
- No other routes will be used by vehicles or personnel for the purpose of gaining access to the site.

NOTE: The design, construction and location of access to provincial roads must be in accordance with the requirements laid down by the Provincial or controlling authority.

F 2.2.2 Maintenance of access roads

- In the case of dual or multiple use of access roads by other users, arrangements for multiple responsibility must be made with the other users. If not, the maintenance of access roads will be the responsibility of the holder of the mining permit/ prospecting right.
- Newly constructed access roads shall be adequately maintained so as to minimise dust, erosion or undue surface damage.

F 2.2.3 Dust control on the access and haul roads

- The liberation of dust into the surrounding environment shall be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. The speed of haul trucks and other vehicles must be strictly controlled to avoid dangerous conditions, excessive dust or excessive deterioration of the road being used.

F 2.2.4 Rehabilitation of access roads

- Whenever a mining permit/ 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 mining/ prospecting situation.
- Roads shall be ripped or ploughed, and if necessary, appropriately fertilised (based on a soil analysis) to ensure the regrowth of vegetation. Imported road construction materials which may hamper regrowth 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 analysed and any deleterious effects on the soil arising from the mining/prospecting operation, be corrected and the area be seeded with a seed mix to the Regional Manager's specification.

F 2.3 OFFICE/CAMP SITES

F 2.3.1 Establishing office / camp sites

- Office and camp sites shall be established, as far as is practicable, outside the flood plain, above the 1 in 50 flood level mark within the boundaries of the mining/ prospecting area.
- The area chosen for these purposes shall be the minimum reasonably required and which will involve the least disturbance to vegetation. Topsoil shall be handled as described in F 2.1 above
- No camp or office site shall be located closer than 100 metres from a stream, river, spring, dam or pan.
- No trees or shrubs will be felled or damaged for the purpose of obtaining firewood, unless agreed to by the landowner/tenant.
- Fires will only be allowed in facilities or equipment specially constructed for this purpose. If required by applicable legislation, a fire-break shall be cleared around the perimeter of the camp and office sites.
- Lighting and noise disturbance or any other form of disturbance that may have an effect on the landowner/tenant/persons lawfully living in the vicinity shall be kept to a minimum.

F 2.3.2 Toilet facilities, waste water and refuse disposal

- As a minimum requirement, the holder of a mining permit/ prospecting right shall, at least, provide pit latrines for employees and proper hygiene measures shall be established.
- Chemical toilet facilities or other approved toilet facilities such as a septic drain shall preferably be used and sited on the camp site in such a way that they do not cause water or other pollution.
- The use of existing facilities must take place in consultation with the landowner/tenant.
- In cases where facilities are linked to existing sewerage structures, all necessary regulatory requirements concerning construction and maintenance should be adhered to.
- All effluent water from the camp washing facility shall be disposed of in a properly constructed French drain, situated as far as possible, but not less than 200 metres, from any stream, river, pan, dam or borehole.
- Only domestic type wash water shall be allowed to enter this drain and any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognised facility.
- Spills should be cleaned up immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognised facility.
- Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., shall be stored in a container at a collecting point and collected on a regular basis and disposed of at a recognised disposal facility. Specific precautions shall be taken to prevent refuse from being dumped on or in the vicinity of the camp site.
- Biodegradable refuse generated from the office/camp site, processing areas vehicle yard, storage area or any other area shall either be handled as indicated above or be buried in a pit excavated for that purpose and covered with layers of soil, incorporating a final 0,5 metre thick layer of topsoil (where practicable). Provision should be made for future subsidence of the covering.

F 2.3.3 Rehabilitation of the office/camp 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) which may not be demolished in terms of any other law;

(b) 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 mining equipment which may be removed

- Where office/camp sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
- Areas containing French drains shall be compacted and covered with a final layer of topsoil to a height of 10cm above the surrounding ground surface.
- The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining/prospecting operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.
- Photographs of the camp and office sites, before and during the mining/ prospecting operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the Regional Manager.

F 2.4 VEHICLE MAINTENANCE YARD AND SECURED STORAGE AREAS

F 2.4.1 Establishing the vehicle maintenance yard and secured storage areas

- The vehicle maintenance yard and secured storage area will be established as far as is practicable, outside the flood plain, above the 1 in 50 flood level mark within the boundaries of the mining/prospecting area.
- The area chosen for these purposes shall be the minimum reasonably required and involve the least disturbance to tree and plant life. Topsoil shall be handled as described in F 2.1 above.

- The storage area shall be securely fenced and all hazardous substances and stocks such as diesel, oils, detergents, etc., shall be stored therein. Drip pans, a thin concrete slab or a facility with PVC lining, shall be installed in such storage areas with a view to prevent soil and water pollution.
- The location of both the vehicle maintenance yard and the storage areas are to be indicated on the layout plan.
- No vehicle may be extensively repaired in any place other than in the maintenance yard.

F 2.4.2 Maintenance of vehicles and equipment

- The maintenance of vehicles and equipment used for any purpose during the mining/prospecting operation will take place only in the maintenance yard area.

- Equipment used in the mining/prospecting process must be adequately maintained so that during operations it does not spill oil, diesel, fuel, or hydraulic fluid.
- Machinery or equipment used on the mining/prospecting area must not constitute a pollution hazard in respect of the above substances. The Regional Manager shall order such equipment to be repaired or withdrawn from use if he or she considers the equipment or machinery to be polluting and irreparable.

F 2.4.3 Waste disposal

- Suitable covered receptacles shall be available at all times and conveniently placed for the disposal of waste.
- All used oils, grease or hydraulic fluids shall be placed therein and these receptacles will be removed from the site on a regular basis for disposal at a registered or licensed disposal facility.
- All spills should be cleaned up immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognised facility.

F 2.4.4 Rehabilitation of vehicle maintenance yard and secured storages areas

- On completion of mining/prospecting operations, the above areas shall be cleared of any contaminated soil, which must be dumped as referred to in section F 2.4.3 above.
- All buildings, structures or objects on the vehicle maintenance yard and secured storage areas shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002.
- The surface shall then 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. The area shall then be fertilised if necessary (based on a soil analysis).
- The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.

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

F 3 OPERATING PROCEDURES IN THE MINING AREA

F 3.1 Limitations on mining/prospecting

- The mining of or prospecting for precious stones shall take place only within the approved demarcated mining or prospecting area.
- Mining/ prospecting may be limited to the areas indicated by the Regional Manager on assessment of the application.

- The holder of the mining permit/ prospecting right shall ensure that operations take place only in the demarcated areas as described in section F 1.1.2 above.
- Operations will not be conducted closer than one and a half times the height of the bank from the edge of the river channel and in such manner that the stability of the bank of the river is effected.
- Precautions shall also be taken to ensure that the bank of the river is adequately protected from scouring or erosion. Damage to the bank of the river caused by the operations, shall be rehabilitated to a condition acceptable to the Regional Manager at the expense of the holder.
- Restrictions on the disturbance of riverine vegetation in the form of reeds or wetland vegetation must be adhered to. The presence of these areas must be entered in Part of the programme and indicated on the layout plan.

F 3.2 Mining/ prospecting operations within the riverine environment

NOTE: The Department of Water Affairs and Forestry may impose additional conditions which must be attached to this EMP. In this regard, please see the Best Practice Guideline for small scale mining developed by DWAF (BPG 2.1)
(available from http://www.dwaf.gov.za)

- The mining of or prospecting for precious stones in the river or the banks of the river will be undertaken only after the Regional Manager has consulted with the Department of Water Affairs and Forestry.
- The canalisation of a river will not be undertaken unless the necessary permission has been obtained from the Department of Water Affairs and Forestry. Over and above the conditions imposed by the said Department, which conditions shall form part of this EMPlan, the following will also apply:

  - ❖ The canalisation of the flow of the river over different parts of the river bed shall be constructed in such a manner that the following are adhered to at all times:

    - ♦ The flow of the river may not be impeded in any way and damming upstream may not occur.
    - ♦ The canalisation of the flow may not result in scouring or erosion of the river-bank.
    - ♦ Well points or extraction pumps in use by other riparian users may not be interfered with and canalisation may not impede the extraction of water at these points.

- Access to the riverbed for the purpose of conducting excavations in the river-bed, shall be through the use of only one access at a time. The location of the access to the river channel across the river-bank shall be at a point of the river-bank where the least excavation and damage to vegetation will occur and shall not be wider than is reasonably required. The position of the river access together with all planned future access points, must be indicated on the layout plan.

F 3.2.1 Rehabilitation of access to river-bed

- When rehabilitating the access point, the original profile of the river-bank will be re-established by backfilling the access point with the original material excavated or other suitable material.
- The topsoil shall then be returned over the whole area to its original depth and if necessary fertilised and the vegetation allowed to grow.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining/prospecting operation be corrected and the area be seeded with a seed mix to his or her specification.
- In the event of damage from an occurrence where high flood waters scour and erode access points in the process of rehabilitation over the river-bank or an access point currently in use, repair of such damage shall be the sole responsibility of the holder of the mining permit or prospecting right.
- Repair to the river-bank to reinstate its original profile to the satisfaction of the Regional Manager must take place immediately after such event has occurred and the river has subsided to a point where repairs can be undertaken.
- Final acceptance of rehabilitated river access points will be awarded only after the vegetation has re-established to a point where the Regional Manager is satisfied that the river-bank is stable and that the measures installed are of durable nature and able to withstand high river-flow conditions.

F 3.2.2 Rehabilitation of mining/prospecting area in the bed of the river

- The goal of rehabilitation with respect to the area where mining/prospecting has taken place in the river-bed is to leave the area level and even, and in a natural state containing no foreign debris or other materials and to ensure the hydrological integrity of the river by not attenuating or diverting any of the natural flow.
- All scrap and other foreign materials will be removed from the bed of the river and disposed of as in the case of other refuse (see section F 2.3.2 above), whether these accrue directly from the mining/prospecting operation or are washed on to the site from upstream.
- Removal of these materials shall be done on a continuous basis and not only at the start of rehabilitation.
- Where reeds or other riverine vegetation have been removed from areas, these shall be re-established systematically in the approximate areas where they occurred before mining/prospecting.
- An effective control programme for the eradication of invader species and other exotic plants, shall be instituted on a regular basis over the entire mining/prospecting area under the control of the holder of the mining permit/ prospecting right, both during mining/prospecting and at the stage of final rehabilitation.

2. THE WATER USE LICENCE

The National Water Act, (Act 36 of 1998), is based on the principles of sustainability, efficiency and equity, meaning that the protection of water resources must be balanced with their development and use.
In addition to being issued with a prospecting right or mining permit a small-scale miner may also need to get a **water use licence** for the proposed water uses that will take place, except in certain cases.
NOTE: The Department of Water Affairs and Forestry (DWAF) developed specific Best Practice Guideline for small scale mining that relates to stormwater management, erosion and sediment control and waste management. Copies of these guidelines can be obtained from the regional office of DME or DWAF.
Applications for a water use licence must be made in good time, such that approval can be granted before a water use activity can begin. The appropriate licence forms for each kind of expected water use should be completed together with supporting documentation. The main supporting document required is a technical report. To make the technical report easier, you can refer to sections in this EMPlan, as most of what the technical report requires has already been done in the EMPlan. If you refer to the EMPlan it must be attached to the technical report.

F 3.3 EXCAVATIONS

F 3.3.1 Establishing the excavation areas

- Whenever any excavation is undertaken for the purpose of locating and/or extracting ore bodies of all types of minerals, including precious stone-bearing gravels, the following operating procedures shall be adhered to:

❖ Topsoil shall, in all cases (except when excavations are made in the river-bed), be handled as described in F 2.1 above.
❖ Excavations shall take place only within the approved demarcated mining/prospecting area.
❖ Overburden rocks and coarse material shall be placed concurrently in the excavations or stored adjacent to the excavation, if practicable, to be used as backfill material once the ore or gravel has been excavated.
❖ Trenches shall be backfilled immediately if no ore or precious stone-bearing gravel can be located.

F 3.3.2 Rehabilitation of excavation areas

The following operating procedures shall be adhered to:

- The excavated area must serve as a final depositing area for the placement of tailings during processing.
- Rocks and coarse material removed from the excavation must be dumped into the excavation simultaneously with the tailings.
- Waste, as described in paragraph F 2.3.2 above, will not be permitted to be deposited in the excavations.
- Once excavations have been refilled with overburden, rocks and coarse natural materials and profiled with acceptable contours and erosion control measures, the topsoil previously stored, shall be returned to its original depth over the area.
- The area shall be fertilised if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora.

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

F 3.4 PROCESSING AREAS AND WASTE PILES (DUMPS)

F 3.4.1 Establishing processing areas and waste piles

- Processing areas and waste piles shall not be established within 100 metres of the edge of any river channel or other water bodies.
- Processing areas should be established, as far as practicable, near the edge of excavations to allow the waste, gravel and coarse material to be processed therein.
- The areas chosen for this purpose shall be the minimum reasonably required and involve the least disturbance to vegetation.
- Prior to development of these areas, the topsoil shall be removed and stored as described in paragraph F 2.1 above.
- The location and dimensions of the areas are to be indicated on the layout plan and once established, the processing of ore containing precious stones shall be confined to these areas and no stockpiling or processing will be permitted on areas not correctly prepared.
- Tailings from the extraction process must be so treated and/or deposited that it will in no way prevent or delay the rehabilitation process.

F 3.4.2 Rehabilitation of processing areas

- Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.
- On completion of mining/prospecting operations, the surface of the processing areas especially if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 300mm and graded to an even surface condition and the previously stored topsoil will be returned to its original depth over the area.
- Prior to replacing the topsoil the material that was removed from the processing area will be replaced in the same order as it originally occurred.
- The area shall then be fertilised if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining/prospecting operation be corrected and the area be seeded with a seed mix to his or her specification.

F 3.5 TAILINGS DAM(S) (SLIMES DAM)

The permission of the Regional Manager must be obtained should a tailings dam be constructed for the purpose of handling the tailings of the mining/prospecting operations. The construction, care and maintenance of tailings dams have been regulated and the relevant regulation is copied herewith, both for your information and

as a guideline to the commissioning, management, operation, closing and aftercare of a tailings deposition facility.

Regulation 73 promulgated under the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) requires the following:

Management of residue stockpiles and deposits

56. *(1)* *The assessment of impacts relating to the management of residue stockpiles and deposits, where appropriate, must form part of the environmental impact assessment report and environmental management programme or the environmental management plan.*

(2) *Residue characterisation*

(a) *Mine residue must be characterised to identify any potentially significant health and safety hazard and environmental impact that may be associated with the residue when stockpiled or deposited at the site(s) under consideration.*

(b) *Residue stockpiles and deposits must be characterised in terms of its –*

(i) *physical characteristics, which may include -*

(aa) *the size distribution of the principal constituents;*
(bb) *the permeability of the compacted material;*
(cc) *void ratios of the compacted material;*
(dd) *the consolidation or settling characteristics of the material under its own weight and that of any overburden;*
(ee) *the strength of compacted material;*
(ff) *the specific gravity of the solid constituents; and*
(gg) *the water content of the material at the time of deposition, after compaction, and at other phases in the life of the deposit.*

(ii) *chemical characteristics, which may include -*

(aa) *the toxicity;*
(bb) *the propensity to oxidize and /or decompose;*
(cc) *the propensity to undergo spontaneous combustion;*
(dd) *the pH and chemical composition of the water separated from the solids;*
(ee) *stability and reactivity and the rate thereof; and*
(ff) *neutralising potential.*

(iii) *mineral content, which include the specific gravity of the residue particles and its impact on particle segregation and consolidation;*

(3) *Classification of residue stockpiles and deposits*

(a) *All residue stockpiles and deposits must be classified into one or a combination of the following categories –*

(i) *the safety classification to differentiate between residue stockpiles and deposits of high, medium and low hazard on the basis of their potential to cause harm to life or property; and*
(ii) *the environmental classification to differentiate between residue stockpiles and deposits with -*

(aa) *a potentially significant impact on the environment due to its spatial extent, duration and intensity of potential impacts; or*
(bb) *no potentially significant impact on the environment.*

(b) *All mine residue stockpiles and deposits must be classified by a suitably qualified person(s).*

(c) *The classification of residue stockpiles and deposits shall determine the –*

(i) *level of investigation and assessment required;*
(ii) *requirements for design, construction, operation, decommissioning, closure and post closure maintenance; and*

(iii) *qualifications and expertise required of persons undertaking the investigations, assessments, design, and construction thereof.*

(d) *The safety classification of residue stockpiles and deposits shall be based on the following criteria –*

Number of residents in zone of influence	*Number of workers in zone of influence*	*Value of third party property in zone of influence*	*Depth to underground mine workings*	*Classification*
0	*< 10*	*0 – R2 m*	*> 200m*	*Low hazard*
1 – 10	*11 – 100*	*R 2 m – R20 m*	*50 m – 200 m*	*Medium hazard*
> 10	*> 100*	*> R20 m*	*< 50 m*	*High hazard*

(e) *A risk analysis must be carried out and documented on all high hazard residue stockpiles and deposits.*

(f) *The environmental classification of residue stockpiles and deposits must be undertaken on the basis of –*
- (i) *the characteristics of the residue;*
- (ii) *the location and dimensions of the deposit (height, surface area);*
- (iii) *the importance and vulnerability of the environmental components that are at risk; and*
- (iv) *the spatial extent, duration and intensity of potential impacts.*

(g) *An assessment of the environmental impacts shall be done on all environmental components which are significantly affected.*

(h) *The assessment of impacts and analyses of risks shall form part of the environmental assessment and management programme.*

(4) *Site selection and investigation:*

(a) *The process of investigation and selection of a site must entail -*
- (i) *the identification of a sufficient number of possible candidate sites to ensure adequate consideration of alternative sites;*
- (ii) *qualitative evaluation and ranking of all alternative sites;*
- (iii) *qualitative investigation of the top ranking sites to review the ranking done in (ii);*
- (iv) *a feasibility study to be carried out on the highest ranking site(s), involving -*
  - (aa) *a preliminary safety classification;*
  - (bb) *an environmental classification;*
  - (cc) *geotechnical investigations; and*
  - (dd) *groundwater investigations.*

(b) *The geotechnical investigations may include-*
- (i) *the characterization of the soil profile over the entire area to be covered by the residue facility and associated infrastructure to define the spatial extent and depth of the different soil horizons;*
- (ii) *the characterization of the relevant engineering properties of foundations soils and the assessment of strength and drainage characteristics.*

(c) *The groundwater investigations may include-*
- (i) *the potential rate of seepage from the residue facility;*
- (ii) *the quality of such seepage;*
- (iii) *the geohydrological properties of the strata within the zone that could potentially be affected by the quality of seepage;*
- (iv) *the vulnerability and existing potential use of the groundwater resource within the zone that could potentially be affected by the residue facility.*

(d) *From these investigations, a preferred site must be identified.*

(e) *Further investigation on the preferred site, shall include –*
- *(i) land use;*
- *(ii) topography and surface drainage;*
- *(iii) infrastructure and man-made features;*
- *(iv) climate;*
- *(v) flora and fauna;*
- *(vi) soils;*
- *(vii) ground water morphology, flow, quality and usage; and*
- *(viii) surface water.*

(f) *The investigations, laboratory test work, interpretation of data and recommendations for the identification and selection of the most appropriate and suitable site for the disposal of all residue that have the potential to generate leachate that could have a significant impact on the environment and groundwater must be carried out by a suitably qualified person.*

(5) *Design of residue stockpile and deposit*

(a) *The design of the residue stockpile and deposit shall be undertaken by a suitably qualified person.*

(b) *An assessment of the typical soil profile on the site is required for residue stockpiles and deposits which -*
- *(i) have a low hazard potential; and*
- *(ii) have no significant impact on the environment.*

(c) *The design of the residue stockpile and deposit must take into account all phases of the life cycle of the stockpile and deposit, from construction through to closure and must include –*
- *(i) the characteristics of the mine residue;*
- *(ii) the characteristics of the site and the receiving environment;*
- *(iii) the general layout of the stockpile or deposit, whether it is a natural valley, ring dyke, impoundment or a combination thereof and its 3-dimensional geometry at appropriate intervals throughout the planned incremental growth of the stockpile or deposit;*
- *(iv) the type of deposition method used; and*
- *(v) the rate of rise of the stockpile or deposit.*

(d) *Other design considerations, as appropriate to the particular type of stockpile and deposit must be incorporated –*
- *(i) the control of storm water on and around the residue stockpile or deposit by making provision for the maximum precipitation to be expected over a period of 24 hours with a frequency of once in a 100 years, in accordance with the regulations made under section 8 of the National Water Act, 1998;*
- *(ii) the provision, throughout the system, of a freeboard of at least 0.5 m above the expected maximum water level, in accordance with regulations made under the National Water Act, 1998, to prevent overtopping;*
- *(iii) keeping the pool away from the walls; where there are valid technical reasons for deviating from this, adequate motivation must be provided and the design must be reviewed by a qualified person as required in terms of sections 9(6) or 9(7) of the Mine Health and Safety Act, 1996;*
- *(iv) the control of decanting of excess water under normal and storm conditions;*
  - *(aa) the retension of polluted water in terms of polluted water in terms of GN R991(9), where measures may be required to prevent water from the residue deposit from leaving the residue management system unless it meets prescribed requirements;*

(bb) *the design of the penstock, outfall pipe, under-drainage system and return water dams;*

(cc) *the height of the phreatic surface, slope angles and method of construction of the outer walls and their effects on shear stability;*

(dd) *the erosion of slopes by wind and water, and its control by (ee) vegetation, berms or catchment paddocks; and*

(ee) *the potential for pollution.*

(e) *A design report and operating manual shall be drawn up for all residue stockpiles and deposits which –*

(i) have a medium to high hazard; and

(ii) have a potentially significant impact on the environment.

(f) *Relevant information must be included in the draft environmental management programme or environmental management plan.*

(6) *Construction and operation of residue deposits:*

(a) *The holder of any right or permit in terms of the Act, must ensure that-*

(i) the residue deposits, including any surrounding catchment paddocks, is constructed and operated in accordance with the approved environmental management programme or environmental management plan;

(ii) the design of the residue deposit is followed implicitly throughout the construction thereof, and that any deviations from the design be approved by the Regional Manager and the environmental manage programme and environmental management plan be amended accordingly;

(iii) as part of the monitoring system, measurements of all residues transported to the site and of all surplus water removed from the site are recorded;

(iv) the provision for appropriate security measures be implemented to limit unauthorised access to the site and intrusion into the residue deposit;

(v) specific action be taken in respect of any sign of pollution;

(vi) adequate measures be implemented to control dust pollution and erosion of the slopes; and

(vii) details of rehabilitation of the residue deposit be provided in the draft environmental management programme or environmental management plan.

(b) *A system of routine maintenance and repair in respect of the residue deposit must be implemented to ensure the ongoing control of pollution, the integrity of rehabilitation and health and safety maters at the site.*

(7) *Monitoring of residue stockpiles and deposits:*

(a) *A monitoring system for residue stockpiles and deposits with respect to potentially significant impacts as identified in the environmental assessment must be included in the environmental management programme or environmental management plan.*

(b) *In the design of a monitoring system for a residue stockpile or deposit, consideration must be given to –*

(i) baseline and background conditions with regard to air, surface and groundwater quality;

(ii) the air, surface and groundwater quality objectives;

(iii) residue characteristics;

(iv) the degree and nature of residue containment;

(v) the receiving environment and specifically the climatic, local geological, hydrogeological and geochemical conditions;

(vi) potential migration pathways;

(vii) potential impacts of leachate;

(viii) the location of monitoring points and the prescribed monitoring protocols; and

(ix) the reporting frequency and procedures.

(8) *Decommissioning, closure and after care:*

(a) *The decommissioning, closure and post closure management of residue deposits must be addressed in the closure plan, which must contain the following -*
- (i) *the environmental classification, including assumptions on which the classification was based;*
- (ii) *the closure objectives, final land use or capability;*
- (iii) *conceptual description and details for closure and post closure management;*
- (iv) *cost estimates and financial provision for closure and post-closure management; and*
- (v) *residual impacts, monitoring and requirements to obtain mine closure in terms of the Act.*

F 3.6 FINAL REHABILITATION

- All infrastructure, equipment, plant, temporary housing and other items used during the mining period will be removed from the site (section 44 of the MPRDA)
- Waste material of any description, including receptacles, scrap, rubble and tyres, will be removed entirely from the mining area and disposed of at a recognised landfill facility. It will not be permitted to be buried or burned on the site.
- Final rehabilitation shall be completed within a period specified by the Regional Manager.

F 4 MONITORING AND REPORTING

F 4.1 Inspections and monitoring

- Regular monitoring of all the environmental management measures and components shall be carried out by the holder of the prospecting right, mining permit or reconnaissance permission in order to ensure that the provisions of this programme are adhered to.
- Ongoing and regular reporting of the progress of implementation of this programme will be done.
- Various points of compliance will be identified with regard to the various impacts that the operations will have on the environment.
- Inspections and monitoring shall be carried out on both the implementation of the programme and the impact on plant and animal life.
- Visual inspections on erosion and physical pollution shall be carried out on a regular basis.

Regulation 55 promulgated in terms of the MPRDA requires the following:

Monitoring and performance assessments of environmental management programme or plan

(1) *As part of the general terms and conditions for a prospecting right, mining right or mining permit and in order to ensure compliance with the approved environmental management programme or plan and to assess the continued appropriateness and adequacy of the environmental management programme or plan, the holder of such right must-*
- (a) *conduct monitoring on a continuous basis;*
- (b) *conduct performance assessments of the environmental management programme or plan as required; and*
- (c) *compile and submit a performance assessment report to the Minister to demonstrate adherence to sub-regulation (b).*

(2) *The frequency of performance assessment reporting shall be-*
- (a) *in accordance with the period specified in the approved environmental management programme or plan, or, if not so specified;*
- (b) *as agreed to in writing by the Minister; or*
- (c) *biennially (every two years).*

(3) *The performance assessment report, shall be in the format provided in guidelines that will from time to time be published by the Department and shall as a minimum contain-*
- (a) *information regarding the period that applies to the performance assessment;*
- (b) *the scope of the assessment;*
- (c) *the procedure used for the assessment;*
- (d) *the interpreted information gained from monitoring the approved environmental management programme or plan;*
- (e) *the evaluation criteria used during the assessment;*
- (f) *the results of the assessment; and*
- (g) *recommendations on how and when deficiencies that are identified and/or aspects of non-compliance will be rectified.*

(4) *The holder of a prospecting right, mining right or mining permit may appoint an independent qualified person(s) to conduct the performance assessment and compile the performance assessment report provided that no such appointment shall relieve the holder of the responsibilities in terms of these regulations.*

(5) *Subject to section 30(2) of the Act, the performance assessment report submitted by the holder shall be made available by the Minister to any person on request.*

(6) *If upon consideration by the Minister, the performance assessment executed by the holder is not satisfactory or the report submitted by the holder is found to be unacceptable, the holder must-*
- (a) *repeat the whole or relevant parts of the performance assessment and revise and resubmit the report; and/or*
- (b) *submit relevant supporting information; and/or*
- (c) *appoint an independent competent person(s) to conduct the whole or part of the performance assessment and to compile the report.*

(7) *If a reasonable assessment indicates that the performance assessment cannot be executed satisfactorily by the holder or a competent person(s) appointed by the holder, the Minister may appoint an independent performance assessment person(s) to conduct such performance assessment. Such appointment and execution shall be for the cost of the holder.*

(8) *When the holder of a prospecting right, mining right or mining permit intends closing such operation, a final performance assessment shall be conducted and a report submitted to the Minister to ensure that -*
- (a) *the requirements of the relevant legislation have been complied with;*
- (b) *the closure objectives as described in the environmental management programme or plan have been met; and*
- (c) *all residual environmental impacts resulting from the holder's operations have been identified and the risks of latent impacts which may occur have been identified, quantified and arrangements for the management thereof have been assessed.*

(9) *The final performance assessment report shall either precede or accompany the application for a closure certificate in terms of the Act.*

F 4.2 Compliance reporting / submission of information

- Layout plans will be updated on a regular basis and updated copies will be submitted on a biennial basis to the Regional Manager
- Reports confirming compliance with various points identified in the environmental management programme will be submitted to the Regional Manager on a regular basis and as decided by the said manager.
- Any emergency or unforeseen impact will be reported as soon as possible.

- An assessment of environmental impacts that were not properly addressed or were unknown when the programme was compiled shall be carried out and added as a corrective action.

F 5 CLOSURE

When the holder of a prospecting right, mining permit or reconnaissance permission intends closing down his/her operations, an environmental risk report shall accompany the application for closure. The requirements of such a risk report is contained in Regulation 60 of the Regulations promulgated in terms of the Act and is quoted below:

F 5.1 ENVIRONMENTAL RISK REPORT

"An application for a closure certificate must be accompanied by an environmental risk report which must include-

(a) the undertaking of a screening level environmental risk assessment where-
- *(i) all possible environmental risks are identified, including those which appear to be insignificant;*
- *(ii) the process is based on the input from existing data;*
- *(iii) the issues that are considered are qualitatively ranked as –*
  - *(aa) a potential significant risk; and/or*
  - *(bb) a uncertain risk; and/or*
  - *(cc) an insignificant risk.*

(b) the undertaking of a second level risk assessment on issues classified as potential significant risks where-
- *(i) appropriate sampling, data collection and monitoring be carried out;*
- *(ii) more realistic assumptions and actual measurements be made; and*
- *(iii) a more quantitative risk assessment is undertaken, again classifying issues as posing a potential significant risk or insignificant risk.*

(c) assessing whether issues classified as posing potential significant risks are acceptable without further mitigation;

(d) issues classified as uncertain risks be re-evaluated and re-classified as either posing potential significant risks or insignificant risks;

(e) documenting the status of insignificant risks and agree with interested and affected persons;

(f) identifying alternative risk prevention or management strategies for potential significant risks which have been identified, quantified and qualified in the second level risk assessment;

(g) agreeing on management measures to be implemented for the potential significant risks which must include-
- *(i) a description of the management measures to be applied;*
- *(ii) a predicted long-term result of the applied management measures;*
- *(iii)the residual and latent impact after successful implementation of the management measures;*
- *(iv) time frames and schedule for the implementation of the management measures;*
- *(v) responsibilities for implementation and long-term maintenance of the management measures;*
- *(vi) financial provision for long-term maintenance; and*
- *(vii) monitoring programmes to be implemented."*

F 5.2 CLOSURE OBJECTIVES

Closure objectives form part of this EMPlan and must-

(a) identify the key objectives for mine closure to guide the project design, development and management of environmental objectives;
(b) provide broad future land use objective(s) for the site; and
(c) provide proposed closure cost

F 5.3 CONTENTS OF CLOSURE PLAN

A closure plan forms part of the EMP and must include the following:

(a) a description of the closure objectives and how these relate to the prospecting or mine operation and its environmental and social setting;
(b) a plan contemplated in Regulation 2(2), coordinated according to generally accepted standards, showing the land or area under closure;
(c) a summary of the regulatory requirements and conditions for closure negotiated and documented in the environmental management programme or plan;
(d) a summary of the results of the environmental risk report and details of identified residual and latent impacts;
(e) a summary of the results of progressive rehabilitation undertaken;
(f) a description of the methods to decommission each prospecting or mining component and the mitigation or management strategy proposed to avoid, minimize and manage residual or latent impacts;
(g) details of any long-term management and maintenance expected;
(h) details of financial provision for monitoring, maintenance and post closure management, if required;
(i) a plan or sketch at an appropriate scale describing the final land use proposal and arrangements for the site;
(j) a record of interested and affected persons consulted; and
(k) technical appendices, if any.

F 5.4 TRANSFER OF ENVIRONMENTAL LIABILITIES TO A COMPETENT PERSON

Should the holder of a prospecting right, mining permit or reconnaissance permission wish to transfer any environmental liabilities and responsibilities to another person or persons, the following will pertain:

(1) An application to transfer environmental liabilities to a competent person in terms of section 48) of the Act, must be completed on Form O as set out in Annexure 1 to the Regulations and be lodged to the Minister for consideration.
(2) The holder of a prospecting right, mining right or mining permit may transfer liabilities and responsibilities as identified in the environmental management plan and the required closure plan to a competent person as contemplated in Regulation 58.
(3) When considering the transfer of environmental liabilities and responsibilities in terms of section 48) of the Act, the Minister must consult with any State department which administers any law relating to matters affecting the environment.
(4) No transfer of environmental liabilities and responsibilities to a competent person may be made unless the Chief Inspector of Mines and the Department of Water Affairs and Forestry have confirmed in writing that the person to whom the liabilities and responsibilities is transferred to, have the necessary qualifications pertaining to health and safety and management of potential pollution of water resources.

F 5.5 NOTES ON LEGAL PROVISIONS

NOTE: The holder of a prospecting right, mining permit or reconnaissance permission must also take cognisance of the provisions of other legislation dealing with matters relating to conservation, and which include, *inter alia,* the following:

* National Monuments Act, 1969 (Act 28 of 1969).
* National Parks Act, 1976 (Act 57 of 1976)
* Environmental Conservation Act, 1989 (Act 73 of 1989)
* National Environmental Management Act, 1998 (Act No. 107 of 1998)
* Atmospheric Pollution Prevention Act, 1965 (Act 45 of 1965)
* The National Water Act, 1998 (Act 36 of 1998)
* Mine Safety and Health Act, 1996 (Act 29 of 1996)
* The Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983).

G. SPECIFIC ADDITIONAL REQUIREMENTS DETERMINED BY THE REGIONAL MANAGER.

Officials in regional offices may use the following matrix to determine the necessity for additional objectives to be included in this Section of the document:

POTENTIAL ENVIRONMENTAL IMPACTS OF MINING										
Activity	Disturbance					Pollution				Visual
	Landform	Soil	Flora	Fauna	Heritage	Land	Water	Air	Noise	
Mining										
Access										
Topsoil removal										
Overburden removal										
Mineral Extraction										
Tailings disposal										
Water Abstraction										
Pipeline route										
Transport										
Accommodation										
Waste Disposal										
Electricity										
Hydrocarbon storage										
Workforce										

Please indicate VL, L, M, H, and VH for Very Low, Low, Medium, high and Very High in each column to determine the main area and severity of impact.

G. This section outlines the specific additional requirements that may be set for the operation by the Regional Manager. Additional requirements will only have been set if the Regional Manager is of the opinion that there are specific impacts on the environment which will not be adequately mitigated by the provisions set within the standard version of the Environmental Management Plan. These requirements form part of the Environmental Management Plan and all elements and instructions contained herein must be complied with by the applicant.

H. UNDERTAKING

We, Aletta Wyatt Dreyer
..., the undersigned and duly authorised thereto by De Beers Consolidated Mines Limited
...
Company/~~Close Corporation/Municipality~~ (Delete that which is not applicable) have studied and understand the contents of this document in its entirety and now hereby duly undertake to adhere to the conditions as set out therein including the amendment(s) agreed to by the Regional Manager in Section G and approved on .....

Signed at Welkom this 13th day of January 20 11

Signature of applicant

Designation Mining & Property Titles Administrator

Agency declaration: This document was completed by .....on behalf of.....

REGIONAL MANAGER:
MINERAL REGULATION
FREE STATE REGION

J. APPROVAL

Approved in terms of Section 39(4) of the Mineral and Petroleum Resources Development Act, 2002 (Act 29 of 2002)

Signed at.....WELKOM.....this.....13TH.....day of...JANUARY....20.11.

.....
REGIONAL MANAGER

REGION:....FREE STATE

This document has been compiled by the Directorate: Mine Environmental Management of the Department of Minerals and Energy at their Head Office in Pretoria. Any comments, suggestions or inputs will be sincerely appreciated. If you have any comments or suggestions regarding this document or its application, please forward your contribution to:

The Director: Mine Environmental Management
Private Bag X 59
PRETORIA
0001

Tel : 012 317 9288
Fax: 012 320 6786
E-mail: dorothy@mepta.pwv.gov.za

REGIONAL MANAGER:
MINERAL REGULATION
FREE STATE REGION

Appendix 1

TO BE READ IN CONJUNCTION WITH # C.2 to # C.5 OF THE ENVIRONMENTAL MANAGEMENT PLAN

The primary objective of the work programme to which this Environmental Management Plan pertains is to locate and assess diamond deposits. All personnel executing the work programme are fully trained and have wide experience of their duties and all work is undertaken under the direct supervision of a geologist. In addition, all work is undertaken in accordance with the internal Environmental Management System.

Kimberlite is a volcanic rock, which occurs randomly and is not specific to any discrete host (country) rock lithology. Furthermore, because of erosion, kimberlites may have no surface expression and in many instances are hidden beneath surficial cover, which can reach tens of metres in thickness, and, thus, the detection thereof requires sophisticated methodologies and resources. Consequently, exploration programmes must be structured accordingly and commence with a reconnaissance sampling phase.

Prospecting for kimberlite is a dynamic, results driven, operation which proceeds in phases, the outcome of which cannot be predicted or predetermined. Excepting the reconnaissance soil/stream-sampling phase, the scope of each subsequent phase is dependent on the results of earlier phases. The results of the reconnaissance sampling will indicate the areas over which the subsequent phases of work are required. These subsequent (follow up) phases can include soil and/or stream sampling, geophysical surveys, pitting/trenching and/or drilling and first stage bulk sampling as well as activities such as detailed drilling and further bulk sampling (pitting/trenching and/or drilling) to gather the additional information required in support of feasibility studies. The sites for the follow-up phases of work cannot be identified in advance nor can the phases be quantified in advance. However, experience has shown each phase of physical prospecting to be short term and usually less than 2 months in duration.

Because of the time required to treat samples and to interpret their results, as well as to plan, schedule and resource the follow-up phases of work required, the phases of work will not follow directly after one another.

If required, soil samples will be collected within a 30m-radius per sample from areas not drained by streams, targeting good deflation sites. Vehicle access is limited and most of the sample sites are accessed on foot. Normally, the uppermost c 2cm of soil is collected from an area not exceeding $1m^2$. In areas with no good deflation surfaces, the samples will be collected by digging to about 20cm depth. Soil samples are normally spaced on a 1km to 500m grid for reconnaissance work, but the grid might have to be reduced to between 300m and 50m for any follow-up work. Minimal, temporary, disturbance is caused to the environment by soil sampling and there are no lasting impacts.

If required, reconnaissance stream samples will be collected from sections of streams known as trap sites. Trap sites may comprise boulders, rock barriers, potholes etc that have the ability to slow down and trap heavy minerals. The volume of the sample is dependent on the catchment area. The sites will be dug to depths of not more than 1m to access any heavy minerals that might have settled to the bottom of the trap site. The field teams will rehabilitate all stream sample sites after collecting the samples and equilibrium is restored by the natural water flow. Minimal, temporary, disturbance is caused to the environment by stream sampling and there are no lasting impacts.

Any rocks that are suspected to be kimberlite will be collected alongside stream and soil samples for petrographic studies. At reconnaissance stage, rock sampling will be *ad hoc* and will depend

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on the ability of the sampler to identify any anomalous rocks of possible kimberlitic affinity. These samples will normally be collected by using geological hammers and would not exceed 2kg in mass. The process has no significant impact on the natural environment.

The processing of soil and stream samples will have no impact on the natural environment. The initial processing of the samples (wet screening to collect the required size fractions) will be undertaken at a central treatment facility in Johannesburg. Thereafter, the samples are concentrated and the resulting heavy mineral concentrate acid-cleaned, to facilitate visual sorting of the concentrates to pick any kimberlitic indicator minerals present. This work will be carried out at De Beers' heavy mineral sorting laboratory in Centurion.

Detailed geological mapping of any targets identified by the reconnaissance work would be carried out in conjunction with air and/or ground geophysical surveys (e.g. magnetometry, electro-magnetic methods, and gravity). Airborne geophysical surveying and geological mapping have no impact on the natural environment.

Methods of ground geophysical survey site marking shall be by means of temporary wooden pegs, which are to be removed once the survey has been completed. Occasionally, a single semi-permanent marker will be required to mark the position of a survey for future reference. A single steel fence dropper, cemented to the ground, will be used for this purpose. The position of such a marker will be cleared with the people currently occupying the land. Survey areas will vary between 500m x 500m to 4km x 4km depending on the inferred size of any target. Survey lines will be spaced at a maximum of 50m and readings will be taken at a minimum of 5m intervals along the lines. Geophysical surveys are carried out on foot. All geophysical instruments are powered by re-chargeable batteries. Geophysical surveying has no impact on the natural environment.

Only in the unlikely event that soil and stream sampling and/or geophysical surveying fail to isolate the possible position of a kimberlite, detailed geochemical sampling would be carried out. Geochemical samples are collected by digging to about 20cm depth in the soil horizon, from where approximately 50g of soil are removed. These samples are normally spaced on a 50m grid but the grid would have to be changed depending on the inferred shape of any target. There is no lasting impact on the natural environment caused by this process because such holes are refilled immediately after the samples have been collected.

Should the prospecting techniques described above indicate that there are possibly kimberlites on the property, pitting/trenching and/or small diameter (<165mm) drilling will be conducted to test for their presence and economic potential. Excavations (trenches and pits) will be sited on a practical basis, in consultation with the people currently occupying the land. The dimensions of such trenches and pits shall be limited to the minimum required to achieve the desired results and within regulated specifications/standards.

Trenching and/or pitting are suited to resolving of any shallow linear anomalies that might be identified and for extracting bulk samples from kimberlites discovered. The trenches would be oriented across trends of the linear anomalies. The length of the trenches will be determined by the estimated width of the body causing the anomaly. The depth of the trenches and/or pits will depend on the thickness of the overburden, i.e. the thicker the overburden, the deeper the excavation.

Pitting and/or trenching for the purposes described are conducted manually or using light earthmoving equipment. Impact is limited to the immediate natural environment and is temporary.

Percussion drilling (<165mm diameter) will be carried out on indicator mineral or geophysical anomalies to test for the presence of kimberlite where overburden thickness or local conditions make pitting and/or trenching impracticable or drilling the preferred method. The holes may be vertical or inclined, usually at a maximum angle of 60° to the horizontal. The borehole depth will

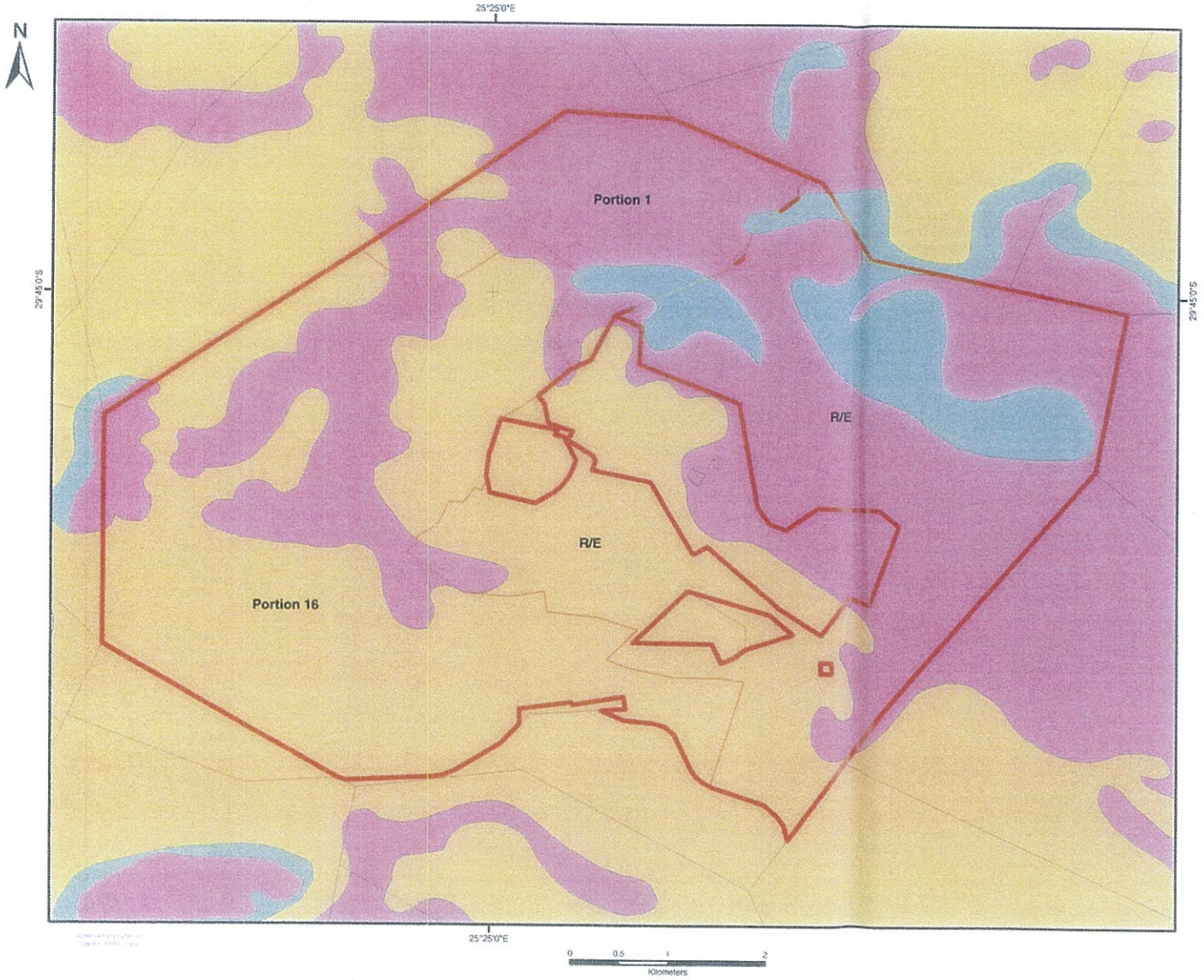
REGIONAL MANAGER:

be determined by the geologist and will depend on the type of anomaly and the geological conditions, including overburden. Small diameter percussion drilling uses a truck mounted rig and truck mounted compressor, each with its own diesel generated power. No local power source is used. Small diameter drilling is short term, drilling at any anomaly is usually completed in c 2 weeks or less but is target dependent. Small diameter drilling has no lasting impact on the natural environment; disturbance is restricted to small, localized, areas and is of short duration.

Core drilling will only be conducted if kimberlite is discovered. The diameter of core drilled does not usually exceed 120mm and is determined by such factors as cost, proposed core sampling, the degree of logging required and proposed geotechnical investigations. The orientation of core holes will vary depending on the drilling objective. In the case of delineation drilling, angled core holes will be drilled to give accurate ore / country rock boundaries at depth. Vertical holes will be drilled for geological modelling and / or sampling of the core. Core holes might be used as pilots for large diameter holes. The geological information provided by the core holes greatly reduces the risk of inappropriate Large Diameter Drilling (LDD) hole locations. Core holes allow for maximum control on information such as overburden thickness, likely kimberlite intersections and therefore allow more accurate determinations of likely Large Diameter Drilling holes for diamond recoveries. Core drilling equipment is usually skid mounted and uses a separate diesel power pack. No local power source is used. The duration of core drilling is dependent on the size and morphology of the kimberlite being investigated. Typically core drilling can be expected to be completed within 2 to 3 months. Core drilling has no lasting impact on the natural environment; disturbance is restricted to small, localized, areas and is of short duration.

Large diameter drilling (LDD), usually up to 450mm diameter, is used for bulk sampling and is the preferred method when there is the need to sample deeper than is practicable by pitting and/or trenching. The diameter and depth of the boreholes drilled will be determined by such factors as cost, proposed bulk sampling, availability of drilling machines, and the volume of sample required, amongst others. LDD will take place after small diameter drilling. LDD rigs and compressors are truck mounted, each with its own diesel generated power. Samples generated (drill chips) are de-slimed on site using a mobile screen and the resultant product discharged directly into bulk bags for transport to a sampling plant either at a central facility in Johannesburg or at a nearby site, dependent on the amount of sample processing to be carried out. Water used in the de-sliming process is recycled using a system of plastic lined earth dams and/or 'portapools'. No local power source is used. LDD is short term, drilling on any kimberlite is usually completed in 3 months or less but is dependent on the size and morphology of the kimberlite and weight of samples required. LDD has no lasting impact on the natural environment; disturbance is restricted to small, localized, areas and is of short duration.

GEOLOGICAL MAP AS REFERRED TO IN REGULATION 7.(1)(e) IN FORCE IN TERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT (28 OF 2002) IN SUPPORT OF THE LODGEMENT OF AN OLD ORDER PROSPECTING RIGHT FOR CONVERSION IN TERMS OF ITEM 6 (2) OF SCHEDULE II OF THE AFORESAID ACT



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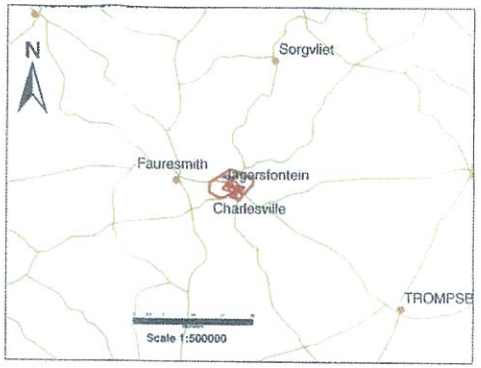
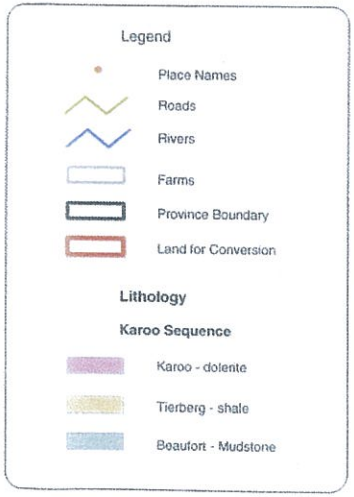
The Remaining Extent, Portion 1 and Portion 16 of Jagerstontein 14





NAME OF HOLDER OF RIGHT :
DE BEERS CONSOLIDATED MINES LTD

SIGNATURE

NAME SAM MPHENGENG (Print)

DATE : 25/04/06

Plan Approved :

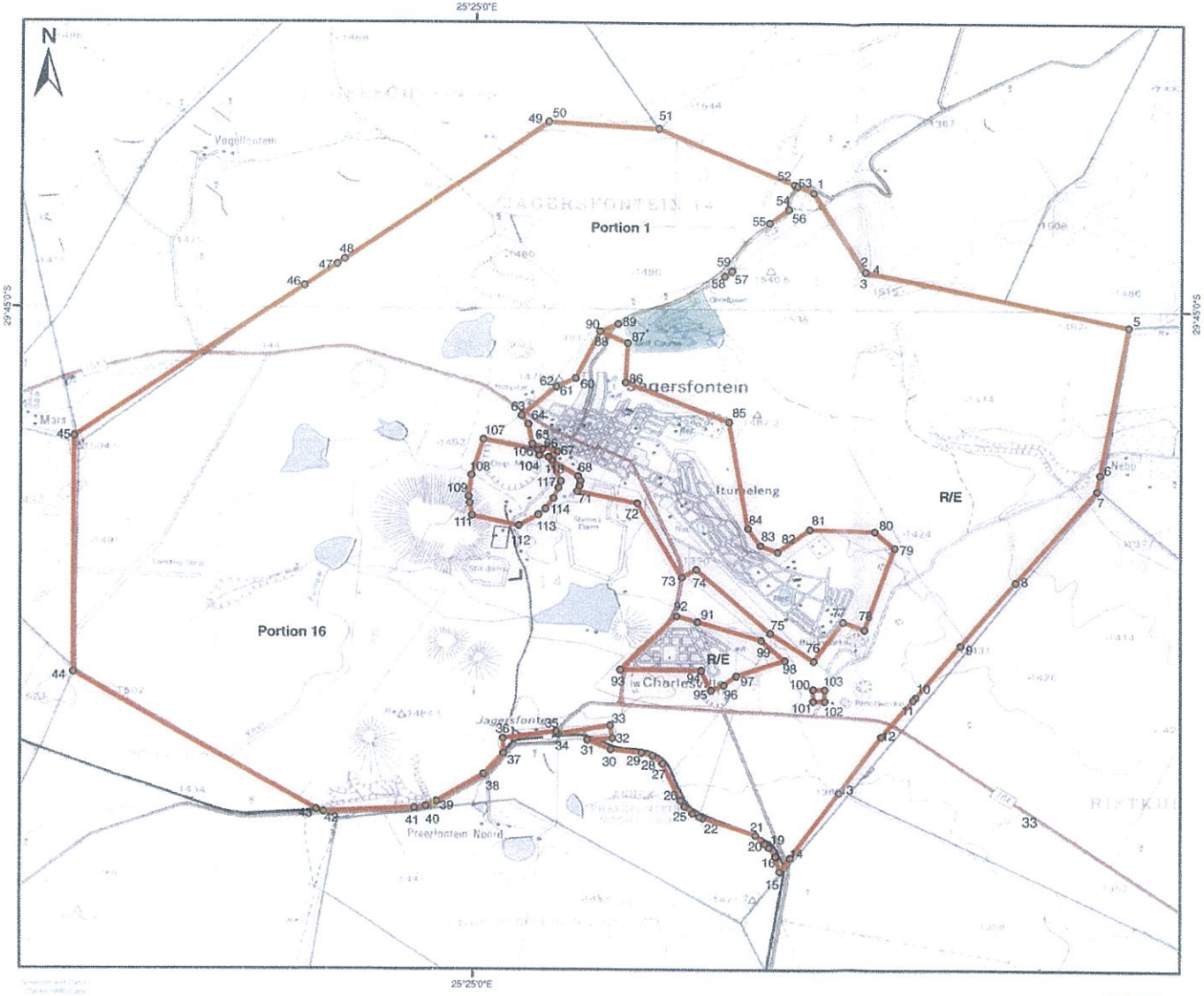
Regional Manager:
Free State Region

Department of Minerals & Energy

Date :

REGIONAL MANAGER
MINERAL REGULATION
FREE STATE REGION

PLAN AS REFERRED TO IN REGULATION 2.2 IN FORCE IN TERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT (28 OF 2002) IN SUPPORT OF THE LODGEMENT OF AN OLD ORDER PROSPECTING RIGHT FOR CONVERSION IN TERMS OF ITEM 6 (2) OF SCHEDULE II OF THE AFORESAID ACT



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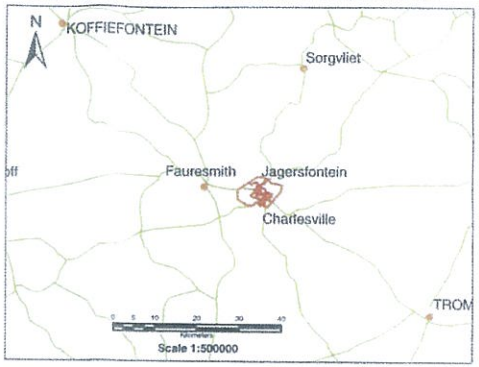
The Remaining Extent, Portion 1 and Portion 16 of Jagersfontein 14



DESCRIPTION OF LAND FOR CONVERSION
The figure numbered :
1,2,3,.....117,118,1
Represents an area of land in extent
Approximately 3853.78 Hectares
District of Fauresmith
PROVINCE
FREE STATE

Legend
- Place Names
- Roads
- Rivers
- Farms
- Province Boundary
- Land for conversion

Notes:.
1) Coordinates for polygon of land for conversion: refer to accompanying listing and ASCII file for details.

NAME OF HOLDER OF RIGHT :
DE BEERS CONSOLIDATED MINES LTD

SIGNATURE

NAME S.J. Mpokoane (Print)

DATE : 25/04/06

Plan Approved :

Regional Manager:
Free State Region

Department of Minerals & Energy

Date :

REGIONAL MANAGER:
MINERAL REGULATION
FREE STATE REGION