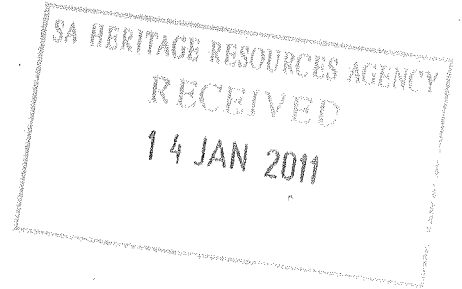




mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA



Private Bag X6093, Kimberley, 8300, Tel: (053) 807 1 700, Fax: (053) 8325 631
First Floor, Liberty Corner, 29-31 Curry Street, Kimberley 8301

From: Directorate: Mineral Regulation: Northern Cape **Date:** 21 December 2010
Enquiries: Mrs R.F Sekepane **E-mail:** raisibe.sekepane@dme.gov.za
Ref No.: NC 30/5/1/2/3/2/1/291 EM

The Director
South African Heritage Resources Agency
PO Box 4637
CAPE TOWN
8000

Attention: Mary Leslie

CONSULTATION OF A SCOPING REPORT SUBMITTED IN TERMS OF SECTION 22 OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT 2002, (ACT 28 OF 2002) IN RESPECT OF THE DIAMONDS ON REMAINDER AND PORTION 1 OF THE FARM REMHOOGTE NO.152, SITUATED IN THE MAGISTERIAL DISTRICT OF PRIESKA. APPLICANT: PIONEER MINERALS PTY LTD.

Attached herewith, please find a copy of a Scoping report received from the above-mentioned applicant, for your comments.

It would be appreciated if you could forward any comments or requirements your Department may have to this office and to the applicant 21 January 2011 as required by the Act.

Consultation in this regard has also been initiated with other relevant State Departments. In an attempt to expedite the consultation process please contact **Mrs Raisibe Sekepane** of this office to make arrangements for a site inspection or for any other enquiries with regard to this application.

Your co-operation will be appreciated.

PP Sekepane
.....
**REGIONAL MANAGER: MINERAL REGULATION
NORTHERN CAPE REGION**

PIONEER MINERALS (PTY) LTD



MYEZO ENVIRONMENTAL MANAGEMENT SERVICES

Environmental Stewardship

REPORT DECEMBER 2010 | APPLICANT: PIONEER MINERALS (PTY) LTD

SCOPING REPORT FOR A MINING RIGHT APPLICATION ON:
REMAINDER AND PORTION 1 OF THE FARM REMHOOGTE No. 152 SITUATED IN THE
MAGISTERIAL DISTRICT OF PRIESKA

Scoping report for Remhoogte

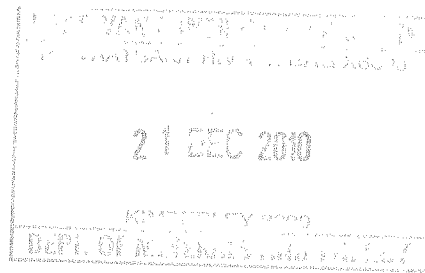


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1. INTRODUCTION

Pioneer Minerals (Pty) Ltd (Pioneer Minerals) is planning to conduct mining activities in the Magisterial District of Prieska at the Remainder and Portion 1 of the Farm Remhoogte No. 152 (Figure 1 and Figure 2).

Pioneer Minerals has lodged a mining right application in terms of Section 22 of Mineral and Petroleum Resources Development Act (No. 28 of 2008) (MPRDA). To support the mining right application, Pioneer Minerals is required to compile an environmental management programme (EMP) in line with provisions of Section 39 and Regulation 51 of MPRDA.

Myezo Environmental Management Services cc, has subsequently been commissioned by Pioneer Minerals to compile this scoping report and succeeding EMP.

The EMP compilation is based on environmental impact assessment (EIA) and associated public participation, as required in terms of Regulation 48 and 49 of MPRDA.

The details of the planned mining activity are as follows:

- Extent of the application area 2 798,49 hectares
- Target Mineral Diamonds
- Mining Method Open cast

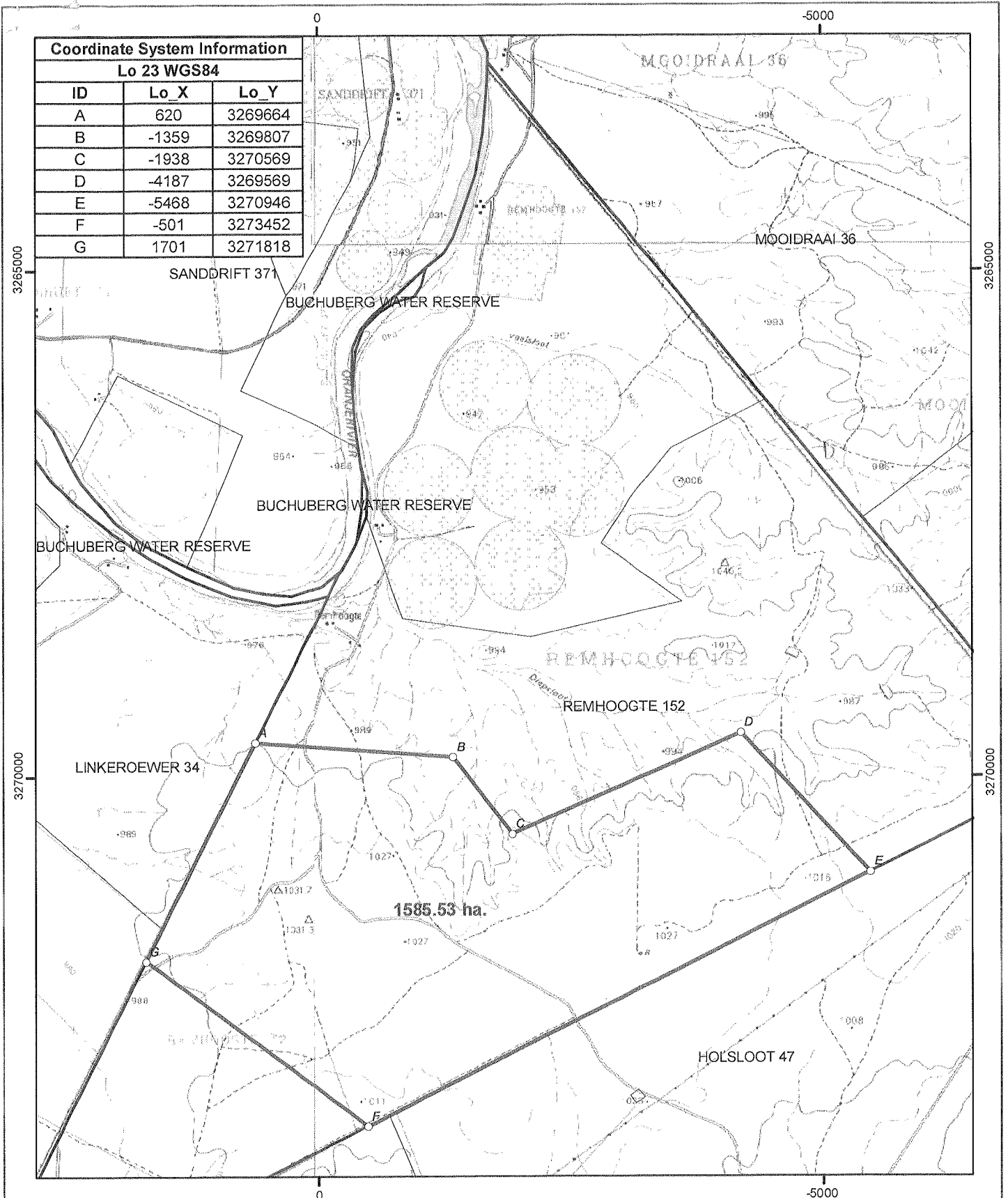
1.1 Background on Pioneer Minerals (Pty) Ltd

Pioneer Minerals (Pty) Ltd's mining and prospecting activities are undertaken by Tran Hex Operations (Pty) Ltd. Pioneer Minerals currently has an existing old order prospecting right. A conversion in terms of item 7 of Schedule II of the MPRDA was lodged on and that was converted to a new order prospecting right which was granted on 03 November 2005 under reference number (NC 30//5/1/1/3/1/126 PR). A renewal for prospecting right was lodged at Department of Mineral Resources(DMR) and subsequently granted on 13 November 2008. Pioneer minerals has now applied for a mining right on 12 November 2010 (NC 30/5/1/2/2/291 MR). Regional and local setting provided on Figures 1 and 2.

1.1.1 Historical permits and licences

The Remhoogte mining right application encompasses the following existing prospecting right NC 30/5/1/1/3/1/126 PR which is held by Pioneer Minerals (Figure 1)

Figure 1: Local setting



Coordinate System Information		
Lo 23 WGS84		
ID	Lo_X	Lo_Y
A	620	3269664
B	-1359	3269807
C	-1938	3270569
D	-4187	3269569
E	-5468	3270946
F	-501	3273452
G	1701	3271818

LAND SURVEYOR DETAILS
 NAME: M E Jakins PLS Number: 0865
 SIGNATURE:

REGIONAL MANAGER:
 HOLDER:

LEGEND

Farm Boundary	Mining Right Application Area
Access Road	Cultivated Land
Intermittent Streams	River
Track or Trail	Other Road
Contour	

COORDINATE SYSTEM INFORMATION

PROJECTION TRANSVERSE MERCATOR
 DATUM HARTEBEESTHOEK 94
 SPHEROID WGS84
 CENTRAL MERIDIAN 23°E
 MAP UNITS METERS

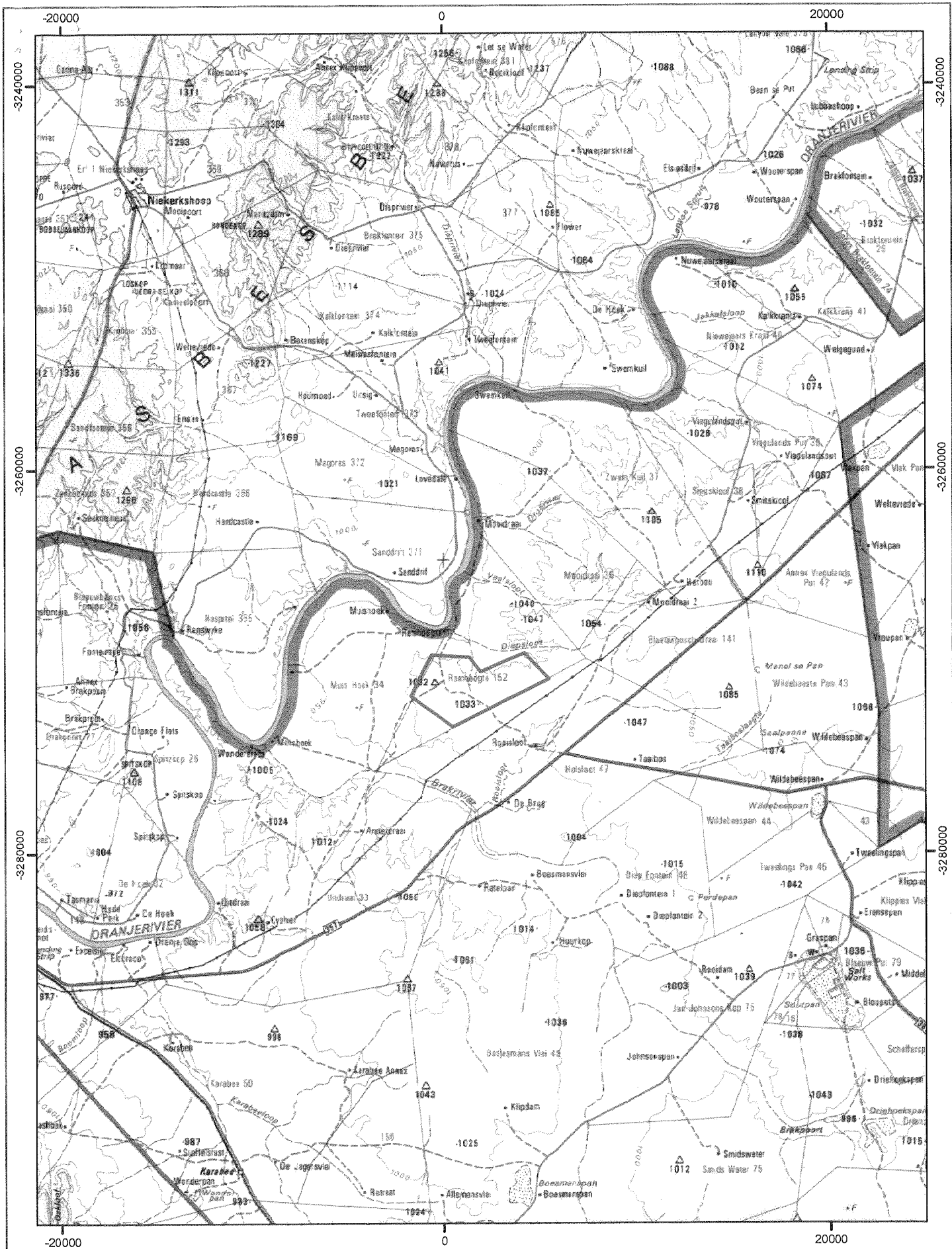
SCALE 1 : 50 000

Figure 1 - The Plan

The figure A to G represents a certain surveyed portion of the Remainder of the farm Remhoogte 152 Prieska RD in extents 1585.36 ha

PROJECT INFORMATION
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Figure 2: Regional setting



LEGEND	
	Farm Boundary
	Access Road
	Intermittent Streams
	Track or Trail
	Other Road
	Contour
	Mining Right Application Area
	Urban Areas
	River

COORDINATE SYSTEM INFORMATION	
PROJECTION	TRANSVERSE MERCATOR
DATUM	HARTEBEESTHOEK 94
SPHEROID	WGS84
CENTRAL MERIDIAN	23°E
MAP UNITS	METERS
SCALE 1: 250 000	

Figure 2 - Locality Plan

PROJECT INFORMATION
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 2010/11/11

2. Environmental impact assessment process and associated scoping process

This document is a scoping report, which details the approach the applicant, has followed and will follow in undertaking the environmental evaluations including, public consultation undertaken and the issues identified. Potential impacts identified from the issues, as well as the proposed management measures are presented in this scoping report which is prepared for submission to the Department of Mineral Resources (DMR) – Northern Cape Regional Office.

2.1 Applicant details

Name of applicant and address	Pioneer Minerals (Pty) Ltd P O Box 723 Parow 7499
Contact person	Mr Vincent Madlela
Telephone and fax number	(021) 937 2000 (t) (021) (f) 021 937 2100
Nature of activity or development	Mining Right Application

2.2 Legislative framework

There are several Acts, which have bearing on environmental management in South Africa. For the purpose of this report, this section of legal requirements does not deal with all these statutes, but rather focuses on those that have compliance implications for Pioneer Minerals. This section focuses on those pieces of legislation, which require authorisation or permits. However, various statutes, whose provisions have to be complied with, irrespective of whether a permit is required or not, are summarized in Table 2.1. The provided statutes are applicable to mining operations and promotes concepts such as social responsibility, responsibility for latent environmental impacts, the polluter pays principle, the precautionary principle, the involvement of stakeholders and rehabilitation.

The statutory requirements have been categorised according to respective sectors identified in the system developed to track performance of the environmental management programme report e.g. waste management.

Brief descriptions of the specific actions required in terms of each item of applicable environmental legislation are included in the register. The mine will consult relevant legal requirements when assessing, or planning, activities under various environmental sectors. The lead authorities are presented for all the Acts, which are covered in the legal register. It should be noted that different statutes require different environmental authorization applications and have different lead authorities. In some instances uncertainty about, who the lead authority is, could arise. This is because a proposed development could fall under the jurisdiction of more than one Act, thus requiring clarity from the relevant departments. The Mine Health and Safety legislation is not covered in this section as this area is dealt with under a separate Division of Pioneer Minerals : Health and Safety.

Table 2.1 should also be read in conjunction with Section 9, with details the nature and extent of further investigations required for the Remhoogte Project.

Scoping report for Remhoogte

Table 2.1: Legislative requirements

Item/Sector	Applicable legislation	Approvals and licences which might be required by Pioneer Minerals
<p>MINING AUTHORISATION</p> <ul style="list-style-type: none"> • Mining authorisation (Section 22) • Environmental authorisation/ approval of the EMP (Section 39) • Complementary to the requirement for mining authorisation, is a requirement to submit an EMP <ul style="list-style-type: none"> ▪ Financial provision (Section 41) ▪ Performance audits (Regulation 55) ▪ Closure certificate (Section 43) ▪ Social and labour plan (Regulation 42) 	<p>Mineral and Petroleum Resources Development Act No. 28 of 2002.</p> <p>Lead Authority: Department of Minerals and Energy</p>	<p>Mining authorisation</p> <p>Pioneer Minerals has to obtain mining authorisation and environmental approvals for the Remhoogte Project.</p> <p>Social and labour plan</p> <p>Financial Provision</p> <p>A rehabilitation cost estimate and evidence of ability to provide for these costs has to be provided and updated annually</p> <p>EMP approvals for the Remhoogte Project</p> <p>The conditions of approval for both prospecting and mining EMPs has to be complied with.</p> <p>Auditing</p> <p>Pioneer Minerals has to submit audit reports to the DME and other authorities on a regular basis to prove compliance with its EMP</p> <p>Closure certificate</p> <p>To be sought after decommissioning phase</p>
<p>ENVIRONMENTAL AUTHORISATION</p> <p>Environmental authorisation for listed activities</p>	<p>National Environmental Management</p>	<p>Waste disposal</p>

Scoping report for Remhoogte

Item/Sector	Applicable legislation	Approvals and licences which might be required by Pioneer Minerals
	<p>Act (107 of 1998) (NEMA) NEMA Regulations 543 and 544 of 18 June 2010 Lead authority: Department of Environmental Affairs</p>	<p>Pioneer Minerals plans to use the municipal waste disposal site called Tshing in Ventersdorp. The permits for the waste disposal site will be sought from the Municipality. Alternatively the mine will register for the use of its own waste disposal site, which will then require that:</p> <ul style="list-style-type: none"> • A registration be submitted to Department of Agriculture, Conservation and Environment (DACE) if the site will fall under waste directions • An application for authorisation is submitted to DACE for a waste disposal site which falls outside the waste directions • Pioneer Minerals to obtain a proof of a licence for the sites where waste is taken by approved waste collectors • A disposal certificate has to be obtained from the waste disposers either than e.g. suppliers. <p>Fuel storage R 544 (13)</p> <p>Basic assessment process will be required for fuel storage sites. Pioneer Minerals intends to make use of a fuel supplier. The supplier might then conduct the basic assessment for the fuel storage at Pioneer Minerals. However, Pioneer Minerals will be liable to ensure that this basic assessment is conducted.</p>
<p>WATER AUTHORISATION Chapter 4 of the National Water Act (Sections 21 to 55) focuses on water use. Generally a water use must be licensed. Water uses that need to be licensed (Section 21) include: Section 21 (a) Taking of water from a water resource Section 21 (g) Disposing of waste in a manner which may detrimentally impact on a water resource Section 21 (j) Removing and/ or discharging of underground water if it is necessary for the efficient continuation of a activity or for the safety of people</p>	<p>National Water Act (36 of 1998) Lead authority : Department of Water Affairs</p>	<p>Pioneer Minerals has to apply for licences for:</p> <ul style="list-style-type: none"> ▪ Taking water from Orange River ▪ a planned slimes dam ▪ removing water from an open pit to continue with mining ▪ storm water design to be approved by DWA

Scoping report for Remhoogte

Item/Sector	Applicable legislation	Approvals and licences which might be required by Pioneer Minerals
Regulation 704		
<p>MATERIALS HANDLING AND STORAGE</p> <p>Hazardous substances</p> <p>Group 1 substances are chemical substances, particularly poisons. These exclude registered medicines and agricultural remedies. A permit is required to fore selling these substances</p> <p>Group II substances are defined in South African Bureau of Standards (SABS) 0228 and are typically chemicals</p> <p>Group III substances are electronic products, capable of emitting electromagnetic radiation</p> <p>Group IV substances are radioactive materials. No person shall produce, acquire, dispose import or export any Group IV hazardous substances without the written authority of the Director General.</p>	<p>Hazardous Substances Act (15 of 1973)</p> <p>Lead Authority: Department of Health</p>	<ul style="list-style-type: none"> Pioneer Minerals will identify any hazardous substances on site and manage these according to the requirements. X-ray permits might be required
<p>Polychlorinated bi-phenyls (PCBs)</p> <p>The SABS Code 0228 classifies polychlorinated biphenyls as a Class 1 toxic hazard. The preferred method of disposal is high temperature incineration, although encapsulation and land co-disposal is allowed.</p>		<p>Pioneer Minerals will ensure that transformers are PCB free or to ensure that transformers will have pollution prevention facilities e.g. bunding to prevent contamination of the environment by PCBs.</p>
<p>AIR POLLUTION REGISTRATION CERTIFICATE</p>	<ul style="list-style-type: none"> Atmospheric Pollution Prevention Act, 1965 (Act 45 of 1965) , repealed by National Environmental Management : Air Quality Act (.39 of 2004) <p>Chief Air Pollution Control Officer (CAPCO) in the Directorate of Air Pollution within DEAT and local authority inspectors.</p>	<p>There are no identified scheduled processes at Pioneer Minerals.</p>

Scoping report for Remhoogte

Item/Sector	Applicable legislation	Approvals and licences which might be required by Pioneer Minerals
<p>FLORA: CONTROL OF ALIEN INVASIVE PLANTS</p> <p>Conservation of Agricultural Resources Act 43 of 1983: Section 5 of the Act prohibits spreading of weeds.</p> <p>In March 2001, Regulations 15 and 16, were promulgated in terms of the Conservation of Agricultural Resources Act (No. 43 of 1983). The overall intent of the Act is to provide for control over the utilisation of natural agricultural resources in order to promote the conservation of soil, water resources, vegetation and to combat weeds and invader plants. Regulations stipulate that weeds and invader plants should be eradicated or controlled in areas where they are not used for recreational or economic purposes.</p> <p>Regulation 15 declares plants that are considered weeds and invaders. It categorises the declared weeds and invaders into three categories (Category 1, 2 and 3).</p> <p>Category 1 plants: are declared weeds and are not allowed to occur on any land other than in a biological controlled reserve.</p> <p>Category 2 and Category 3 plants: are declared invader species.</p>	<p>Conservation of Agricultural Resources Act (43 of 1983)</p> <p>Lead Authority Department of Agriculture</p>	<p>Rehabilitation strategies will be developed</p> <p>Categorisation of the alien invasive plant will be done</p>
<p>Category 2 invader species: are only allowed in demarcated areas or biological control reserves, which are areas designated for the breeding of biological control agents. Category 2 invader plants may be established and kept in demarcated areas, but appropriate steps must be taken to curtail their spread beyond the demarcated area. These plants must serve a commercial purpose (can be used as building material, animal fodder, bee farming or soil stabilising agents). They are prohibited within 30 m of the 1:50 year floodline of watercourses or wetlands.</p> <p>Category 3 plants: are not allowed on any land other than a biological controlled reserve. Invader plants already existing on site that are not</p>		

3. Methodology to be applied to conduct scoping

The scoping process methodology will be premised upon NEMA principles.

Section 2

- Section 2(f) and Section 2 (h) The participation of interested and affected parties will be encouraged and the environmental capacity building will be provided to ensure effective participation
- Section 2(g) The needs and values of IAPs will be sought to be understood and various participation approaches in line with these needs will be applied
- Section 2 (j) Employees will be informed about the environmental rights and the relevance of the environmental studies for the Remhoogte Project in their activities.

The scoping methodology will entail:

- Identifying key interested and affected parties;
- Identifying issues and concerns;
- Understanding the biophysical and human environment so that appropriate follow-up studies could be undertaken;
- Understanding preferred forms of communication and language issues so that the public involvement process can be designed to address these issues.

According to NEMA Regulation 543 No.1 (3) "for any action contemplated in terms of those regulations which a timeframe is prescribed, the period of 15 December to 02 January must be excluded in the reckoning of days". As such the principles above will not be public consultation will be done after 02 January 2011 and submitted to DMR as part of EMPR.

The scoping approach that will be followed is provided in Table 3.1.

Scoping report for Remhoogte

Table 3.1: Methodology applied to conduct scoping

Project phases	Project stage	Activity and Task	Objectives	Output
Social scan (Preliminary Project Planning and affected parties and preparation for their engagement)	<ul style="list-style-type: none"> Regulatory authority identification and involvement 	<ul style="list-style-type: none"> Telephonic contact was established with key regulatory authorities for pre-clarification of the proposed scope of work 	<ul style="list-style-type: none"> To clarify legislative and administrative requirements. It was determined that the EMPR would have to be in support of the mining right application and was therefore not an amendment To investigate various options for the EMPR Define the scope of the succeeding environmental impact assessment (EIA) and as far as possible 	
	<ul style="list-style-type: none"> Project initiation Site visits 	<ul style="list-style-type: none"> Meeting will be held with Pioneer Minerals Desktop study 	<ul style="list-style-type: none"> To agree on scope of work and get project description and various alternatives To determine the social, cultural and socio-economic status of the project environment To source available data and surveyed plans 	<ul style="list-style-type: none"> Project programme, showing time frames (Table 7.1)

Scoping report for Remhoogte

Project phases	Project stage	Activity and Task	Objectives	Output
	<ul style="list-style-type: none"> • Preliminary identification interested and affected parties 	<ul style="list-style-type: none"> • Identification of key stakeholders (Key stakeholders such the landowner were identified during prospecting application) • Gathering of interested and affected parties data base by : <ul style="list-style-type: none"> ⇒ Calling IAPs and confirming their contact details and preferred methods of communication: • These written forms of communication will be indicated by IAPs with the following options: <ul style="list-style-type: none"> ⇒ Fax ⇒ Registered post ⇒ E-mail ⇒ The preferred languages are English and Afrikaans • Development of background information documents to facilitate participation • Consolidating preliminary environmental issues to ensure that they are captured in the succeeding EIA phase 	<ul style="list-style-type: none"> • To identify key environmental issues which attention needs to be focussed on during scoping • Develop public involvement strategy which meet the needs of the IAPs and which builds on the previous consultation which was undertaken 	<ul style="list-style-type: none"> • A preliminary IAP register which was then used to engage the IAPs • A provisional list of interested and affected parties (Presentation 1)

Presentation 1: Group of interested and affected parties

PROVISIONAL LIST OF INTERESTED AND AFFECTED PARTIES

[This list is subject to change]

- **AUTHORITIES**
 - Department of Minerals Resources
 - Department of Water Affairs
 - Department of Agriculture
- **PROVINCIAL**
 - Department of Agriculture, Conservation and Environment
 - Department of Roads and Transport
- **LOCAL**
 - Prieska Municipality
- **LAND OWNER**
 - Mrs A. J de Villiers
- **SPECIALIST INTEREST GROUPS**
 - Water User Association
 - Northern Cape Parks and Tourism Board
- **SERVICE PROVIDERS**
 - Eskom

Scoping report for Remhoogte**4. Existing status of the environment****4.1 Climate**

The mine is situated at a climatic region with maximum daily summer and winter temperatures of about -4.9°C (June July) and 42.2°C (Summer) with December, January and February being the warmest months respectively. The average annual rainfall is about 330mm.

4.2 Geology**The General Application Area**

Terraces of the palaeo-Orange River between Douglas and Prieska are based on shales and diamictite of the Dwyka Subgroup (Figure 3) and occur at three general elevations above the present Orange River:

- 0 – 20 m: lower terraces
- 30 – 50 m: intermediate terraces
- 60 – 110 m: upper terraces

The ages of these terraces young with decreasing elevation and vary from Pleistocene-Pliocene for the lower terraces to Plio-Miocene for the upper terraces. Diamond content also generally decreases with lower elevation. Lower terrace deposits are generally covered by 1 – 4 m of sand whereas the upper terrace deposits are capped by a hard calcrete layer some 2 – 3 m thick which protected the gravel deposits from erosion and prevented exploitation in the past. Historical mining activity focussed on the unconsolidated Rooikoppie gravels overlying the calcrete layer.

Lower and Upper terraces on Remhoogte are situated at ~ 15 m and 85 m respectively above the present bed of the Orange River. An alluvial floodplain deposit of fine sand and silt line the south bank of the Orange River on the northern portions of Remhoogte (Figure 3).

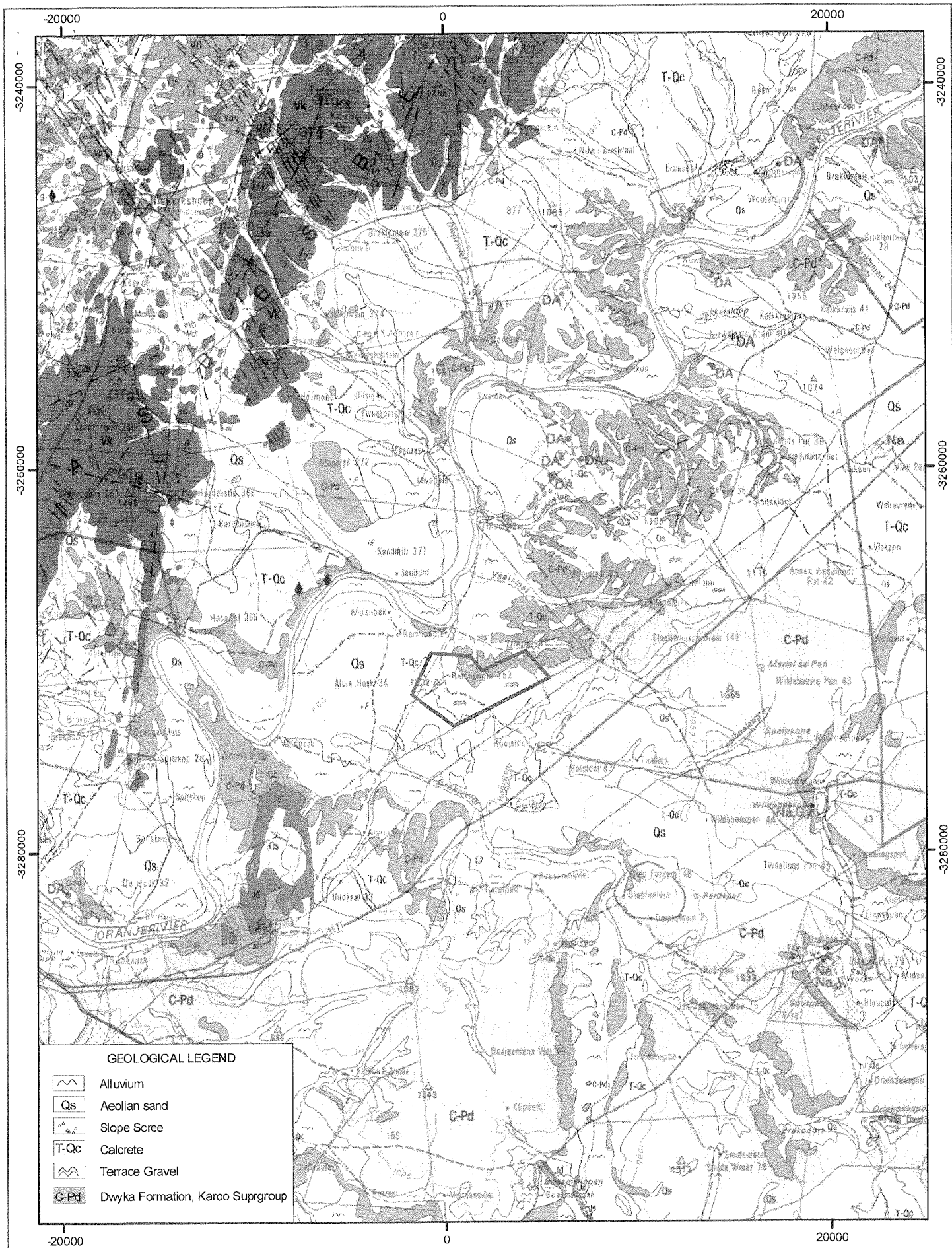
The Diamond Deposit

The gravel layers at Remhoogte were probably initially deposited in a meandering river environment similar to the other primary gravel deposits in the area (e.g. Saxendrift).

Rooikoppie gravels overlie the entire occurrence of upper gravels on Remhoogte and has an average estimated thickness of about 0.5 m. The component clasts consist mainly of poorly rounded pebbles of banded iron formation with some subordinate chert, jasper, quartzite and lava. The gravel is underlain by a very hard layer of calcrete and silcrete, often exhibiting deep solution cavities or depressions which are filled with Rooikoppie gravel.

Primary (or "Upper") gravels on Remhoogte are only partly exposed in one prospecting trench and along the northern "escarpment" which forms the edge of the elevated terrace area.

Figure 3: Geological map



LEGEND

- Farm Boundary
- Access Road
- Intermittent Streams
- Mining Right Application Area

COORDINATE SYSTEM INFORMATION

PROJECTION	TRANSVERSE MERCATOR
DATUM	HARTEBEESTHOEK 94
SPHEROID	WGS84
CENTRAL MERIDIAN	23°E
MAP UNITS	METERS
SCALE 1 : 250 000	
0 2.5 5 10	Kilometers

Figure 3 - Regional Geology

PROJECT INFORMATION
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Scoping report for Remhoogte

There is no overburden above the Rooikoppie gravel. Overburden as defined here, consist of a hard layer (0.5 to 2 m thick) of calcrete and silcrete containing a few clasts of banded iron formation, underlying the Rooikoppie gravel and overlying the Upper gravel. The hard upper calcrete layer grades down into soft powdery calcrete and partly calcretized coarse boulder gravel and sand. The total average overburden thickness is about 2 to 4 metres.

The older gravels on Remhoogte have been deposited on a planed, slightly undulating bedrock floor that slopes gently northwards towards the Orange River. The bedrock consists mainly of soft Dwyka shale with minor tillite. A number of linear features identified during geological mapping of the deposit may represent dolerite dykes or faults in bedrock below the gravels. Such bedrock features normally cause extraordinary stream turbulence leading to excessive scouring or waterfalls and the formation of traps sites for diamonds.

4.3 Topography

The mine is located at a flat terrain with contours ranging between 1520 mamsl and 1580mamsl.

4.4 Soils and land capability

The escarpment slope comprises Dwyka tillite exposure. The terrace is covered by calcrete and Rooikoppie gravel with a little sand cover in places and no clay material due to little sand cover and dominant Rooikoppie gravel the agricultural potential of the soils is not good.

4.5 Land use

The area is currently being used for grazing of sheep. The carrying capacity for stock in this region is low (3-4 ha per small animal unit).

4.6 Vegetation

Most of the high lying areas can be classified as closed shrubland (Hoffman 1998) falling in the Nama Karoo biome. The dominant plant species are *Acacia mellifera* (Black Thorn), *Acacia Tortilis* (Umbrella Thorn), *Boscia albitrunca* (Shepherd's Tree) and *Rhigozium trichotomum* (Drie doring). The low-lying areas are grasslands hosting grasses such as *Stipagrostis uniplumis* (Silky Bushman grass), *Stipagrostis obtuse* (Small Bushman grass) and *Enneapogon scoparius* (Bottlebrush grass). There are no endangered plant species.

Scoping report for Remhoogte**4.7 Animal life**

Among the antelope species that could be encountered are *Raphecerus campestris* (steenbok) *Tragelaphus strepsiceros* (kudu) and *Sylvicapra grimmia* (grys duiker). Smaller mammals such as *Otocyon megalotis* (Bat-ear Fox), *Canis mesomelas* (Blackback jackal), and *Lepus capensis* (Cape hare) are common on the property. The following reptile species occur on Remhoogte : *Naja nivea* (Cape cobra), *Bitis arietans* (Puff-adder), *Geochelone pardalis* (Mountain tortoise) and *Psammobates oculiferus* (Kalahari Padloper). There are no known endangered faunal species present.

4.8 Surface water

The prospecting activities at Farm Remhoogte are taking place next to Diepsloot (\pm 2km away) and Vaalsloot (5km away) Streams which crosses through the Remhoogte Farm. The Diepsloot and Vaalsloot Streams are within the Orange River Catchment (Orange River is \pm 5 km north of the application area).

4.9 Ground Water

The mean depth of water table during summer is approximately 120m and during winters is 140m. Ground water is currently not used and there are no springs or fountains on the site.

4.10 Air quality

The mining will release dust during operation. Dust will also be generated due to vehicles accessing the mining site. If dust becomes excessive, it will be controlled by wetting the access roads. Suitable personal protective equipment (PPE) and protective clothing will be provided as prescribed by the company's standard operating procedure..

4.11 Visual

During mining, there will be dumps and these dumps will change the character of the landscape. Rehabilitation initiatives will be done to alleviate the visual impact.

4.12 Archaeology

No graves were identified during visual site inspection, drilling and bulk sampling process. Should there be any old graves found during mining, these will be fenced off and the South African Heritage Resources Agency will be notified.

4.13 Socio-economic

Remhoogte is situated on the southern bank of the Orange River, some 30 km northeast of Prieska and 190km southwest of Kimberley (Figure 2). The locality is about 80km downstream of the confluence of the Vaal and Orange Rivers in the District of Prieska.

Mine Community and Rural development

Pioneer minerals will develop a Social and Labour Plan (SLP) to include programmes for community and rural development. The Mine will provide sufficient finances for its SLP through internal funding, and through forming partnerships with stakeholders, government, employees and local organizations. This SLP be implemented by the Pioneer Minerals.

5. Anticipated environmental, social and cultural impacts

Table 5.1 provides anticipated environmental impacts.

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Table 5.1 : Potential impact

Environmental Element	Activity / Aspect	Potential Impact
Geology Topography	<p>Impacts on topography will arise from the following activities:</p> <ul style="list-style-type: none"> • Existing tailings dumps. • Dumping of overburden dumps • Earthworks related to new plant upgrade • Construction of slimes dam walls. • Construction of logistical structures 	<ul style="list-style-type: none"> • No impact associated with sterilisation of mineral resources • Changes to surface topography due to placement of infrastructure <p>There are existing dump as well as overburden dumps, which were created during previous bulks sampling and mining operations. Historical mining background is presented in Section 4. The planned new mining operations will not entail permanent creation of dumps, since there will be promotion of backfilling</p>
Soils	<ul style="list-style-type: none"> • Fuel and lubricant management: • Storage of fuels. • Facility construction • Field management of lubricants. • Recycling of oils • Oil spills. • Run-off from workshops 	<ul style="list-style-type: none"> • Soil contamination due to spillage of chemicals
Land capability	<ul style="list-style-type: none"> • Topsoil removal. • Construction of infrastructure 	<ul style="list-style-type: none"> • Loss of soil resources due to erosion
Land use	<ul style="list-style-type: none"> • Topsoil removal/disturbance • Placement of surface infrastructure 	<ul style="list-style-type: none"> • Loss of land of agricultural potential
Land use	<ul style="list-style-type: none"> • Placement of infrastructure 	<ul style="list-style-type: none"> • Loss of existing land use

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Environmental Element	Activity / Aspect	Potential Impact
Vegetation	<ul style="list-style-type: none"> • Mine activities such as vegetation clearing during construction 	Loss of population/communities of conservation value
Fauna	<ul style="list-style-type: none"> • Vegetation clearing • Noise generation activities 	<ul style="list-style-type: none"> • Loss of animal population/communities of conservation value due to loss of habitat
Surface Water	<ul style="list-style-type: none"> • Topsoil removal • Suspended solids from erosion of disturbed soil and chemical pollutants from construction materials. • Overflow from return water dam • Spillages and wash water from the plant (Ferro-silicon, oils and lubricants) 	<ul style="list-style-type: none"> • Contamination of watercourses by construction and operational activities • Deterioration in water quality as a result of diffuse pollution from the mine <p>The potential overflow of the return water dam, thus carrying sediments and silt into drainage channels will be minimised by active pumping of water back into the process water system.</p>
Groundwater	<ul style="list-style-type: none"> • Downward infiltration of contaminated process/slurry water 	<ul style="list-style-type: none"> • Impact of dewatering on other ground water users • Contamination of ground water resources due lack of ground water monitoring

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Environmental Element	Activity / Aspect	Potential Impact
Air quality	<ul style="list-style-type: none"> • Vehicle entrainment emissions from: the initial hauling of ore from the mine access to the plant • Sources within the processing plant, including: <ul style="list-style-type: none"> • Materials handling • Primary, secondary and tertiary crushing • Screening • Vehicle tailpipe emissions from plant personnel vehicles and haul trucks. 	<ul style="list-style-type: none"> • Decreased ambient air quality due to wind blown respirable particulates (increased PM10 concentrations) • Potential for health impacts due to predicted suspended fine particulate concentrations during construction, operational and decommissioning phases • Nuisance dust due to predicted dust deposition rates during construction, operational and closure phases
Noise	<ul style="list-style-type: none"> • Crushing • Hauling of waste rock initially out of and later into mine. • Hauling of ore and/or waste rock • Tipping of ore into receiving bin • Dumping/loading of waste rock 	<ul style="list-style-type: none"> • Impact: Increase in ambient noise levels during construction and operational phases
Archaeology	<ul style="list-style-type: none"> • Placement of infrastructure • Vandalism 	<ul style="list-style-type: none"> • Disturbance/loss of archaeological/historical remains • within the surface infrastructure area
Sensitive Landscape / Visual Impact	<ul style="list-style-type: none"> • Surface infrastructure <ul style="list-style-type: none"> ▪ Tailings dam ▪ Plant ▪ Return water dam ▪ Waste rock dump ▪ Job creation and service provision 	<ul style="list-style-type: none"> • Visual intrusion due to infrastructure during operational phase
Socio-Economic Impact	<ul style="list-style-type: none"> ▪ Job creation and service provision 	<ul style="list-style-type: none"> • Increase in employment opportunities and income generation • Influx of job seekers • Community upliftment programmes

Scoping report for Remhoogte**6. Land Use or development alternatives**

The size and depth of the deposit has been determined by means of an extensive exploration programme over a period of two years. Therefore mining land has been determined as the most feasible alternative by both the applicant and the land owners. However, to ensure that the agricultural use of the farms is not permanently lost, the mine will promote rehabilitation strategies to ensure that open pits are backfilled. The best practice principle is to backfill all washed and screened material into the already mined out areas and cover this material with the overburden and topsoil that has been previously put for this purpose. The post-mining land use will be determined such that the farms can still be used for grazing after mine closure.

6.1 Alternative means of carrying out the proposed operation**6.1.1 Project description****6.1.1.1 Target Minerals**

Diamonds

6.1.1.2 Surface infrastructure

Surface infrastructure is being layout is provided in Drawings 001, 002 and 003.

6.1.1.3 Mining Method

Open cast mining operations is planned. The planned mining sequence is provided in Section 7.2.

Rehabilitation

The influence on the environment has now become one of the most important considerations when designing and operating a mine. Not only the visual impact of overburden and tailings dumps is considered, but also excavations and their visual, botanical and safety repercussions are taken into account.

In order to minimize the detrimental effects mentioned above, it is necessary to backfill into worked out areas to the greatest possible extent. Trans Hex Operations and Pioneer Minerals are responsible mining companies as indicated in their mining works programme, following the best practice principle with a social and environmental conscience. The best practice principle is to backfill all washed and screened material into the already mined out areas and cover this material with the overburden and topsoil.

Rehabilitation strategies to ensure that the visual character of the area is not compromised and that the post mining land use is beneficial to the land owners, will be developed. Topsoil will be stripped and hauled to already backfilled areas or stockpiled on surface for later use should there will be no immediate available backfilled area. Washed and screened material will be backfilled into the already mined out areas and cover this material with the overburden and topsoil that has been previously put for this purpose.

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Mineral processing

A typical diamond pan plant will be utilized to process the diamondiferous gravel (see attached plant diagrammatic flow sheet; Appendix 1). The material from the infield screen will be fed into the plant at a rate of 300t/h.

Mine residue disposal

Pioneer Minerals still has to apply for a slimes dam for disposal of mine residue. An application will be lodged at the Department of Water Affairs.

Employment opportunity

The development of future Human Development South Africa's leadership is a key strategic focus area. Human Resource Development (HRD) is managed across all levels of employment at Trans Hex and is seen as a critical component in achieving the company's employment equity and gender equity targets whilst addressing the growing shortage of critical skills in the Mining industry in South Africa.

The company's HRD plans are being continuously aligned with the Workplace Skills Plan (WSP) and integrated with the long-term business plan. In terms of this process, HRD plans are constantly assessed, reviewed and revised to cover the organization's short-term, medium-term and long-term human capital development requirements. Thus, Trans Hex, through its Human Resource Development Policy, aims to:

- Develop and sustain core competencies and to maximize its human resources in order to meet its strategic objectives and to improve its operational performance;
- Create a learning culture by assisting and facilitating the process whereby employees take responsibility to improve their own educational and competency levels, to the mutual benefit of the individual and the organisation;
- Ensure integration and uniformity in all learning and development processes through the leverage of technologies;
- Support and reinforce, through the various learning and development endeavours, the values of the company;
- Ensure that learning and development initiatives are, where applicable, customer focused and aligned with business objectives; and
- Establish life-long learning as the major thrust of learning and development.

Internal human resource development is, from a business and strategic point of view, the primary focus of the company's learning and development effort. This entails strategies aimed at the development of individuals and the organisation through;

- The continuous improvement of the competencies (as expressed through expertise, skills and knowledge) of all employees through training, development and educational assistance so that all employees can reach their full potential in the work environment;
- Organisation development interventions and programmes to help align the company to a continuously changing environment; and
- Accelerated development opportunities in line with employment equity strategies.

All training and development is based on a thorough needs analysis, taking cognisance of identified skills deficiencies via the Performance Management process, Succession Planning, Employee

Scoping report for Remhoogte**6.1.2 Alternatives**

Various alternatives which are being considered at this stage are as follows:

Diesel tanks

Surface storage of diesel tanks

Underground storage

Mobile tanks with metal bund walls to be transported around the site along the strike

Mineral processing

1 Installation of thickeners

2 Operate the plant without the thickeners

The protocol for sourcing the process plant's water requirements is by using the sources with the highest levels of contaminated water first and progressively moving towards the cleaner water sources. The water sourcing protocol to be investigated for Pioneer Minerals, in decreasing priority, is as follows:

- Slimes dam supernatant water;
- Water removed from the workings, should there be a need to remove this water for efficient removal of ore
- If necessary, storm water dam/ evaporation pond containing runoff from the process plant.

Mineral processing flow chart is attached as Appendix 1

During specialist studies other alternative designs will be identified and developed as part of management measures for those activities that prove to have significant environmental impacts.

6.1.3 No-Go option

The Remhoogte project plans to employ a total of 71 people. The non-approval of this mining operation would impact negatively on the employment rate for the region and the families who are likely to benefit from the positive employment opportunities.

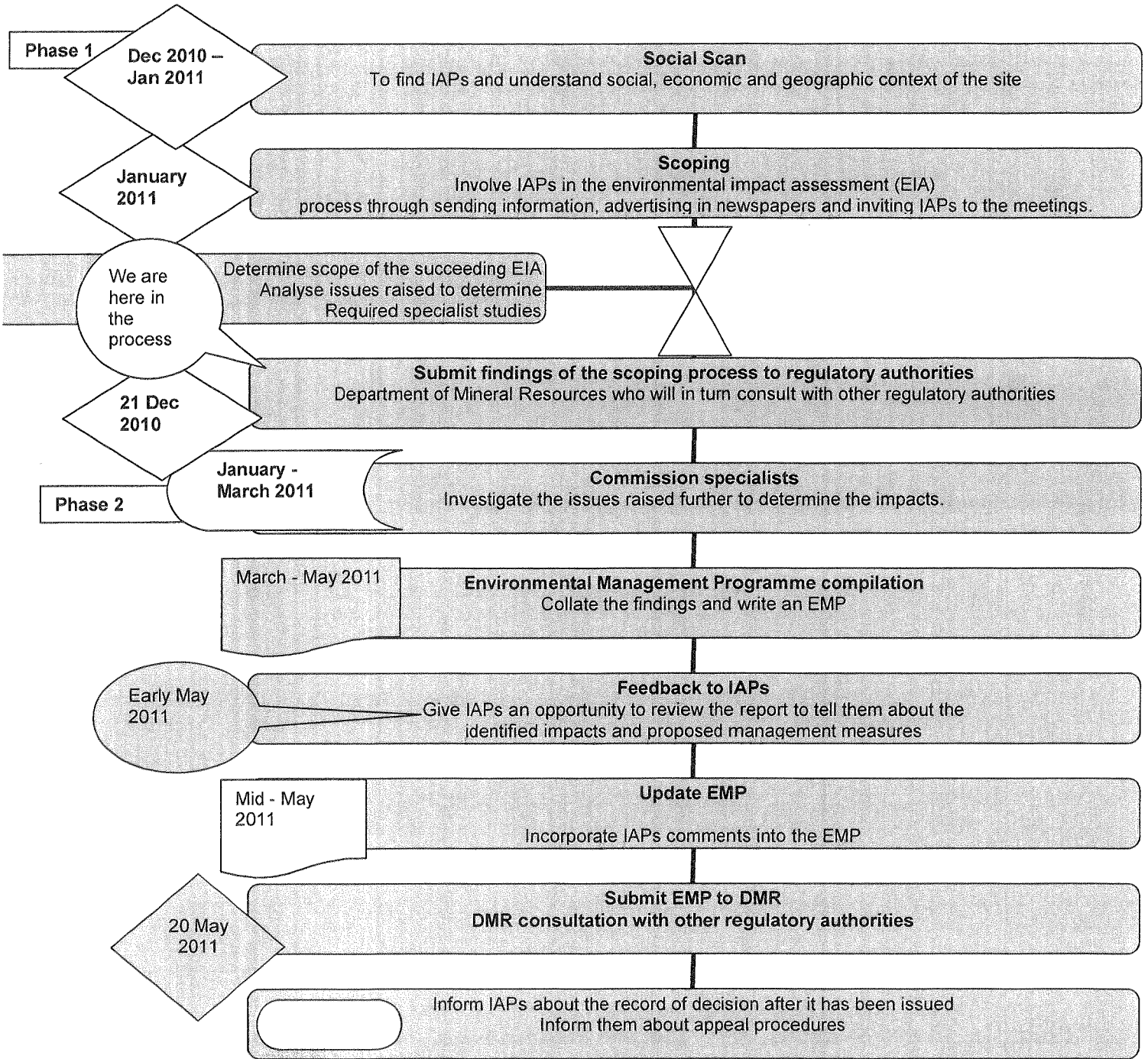
7. Procedure to plan and develop the proposed mining operation**7.1 EIA Approach**

A phased approach will be adopted in undertaking the environmental studies for the Remhoogte Project. The planned approach is presented in Table 7.1.

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Table 7.1: EIA phased Approach



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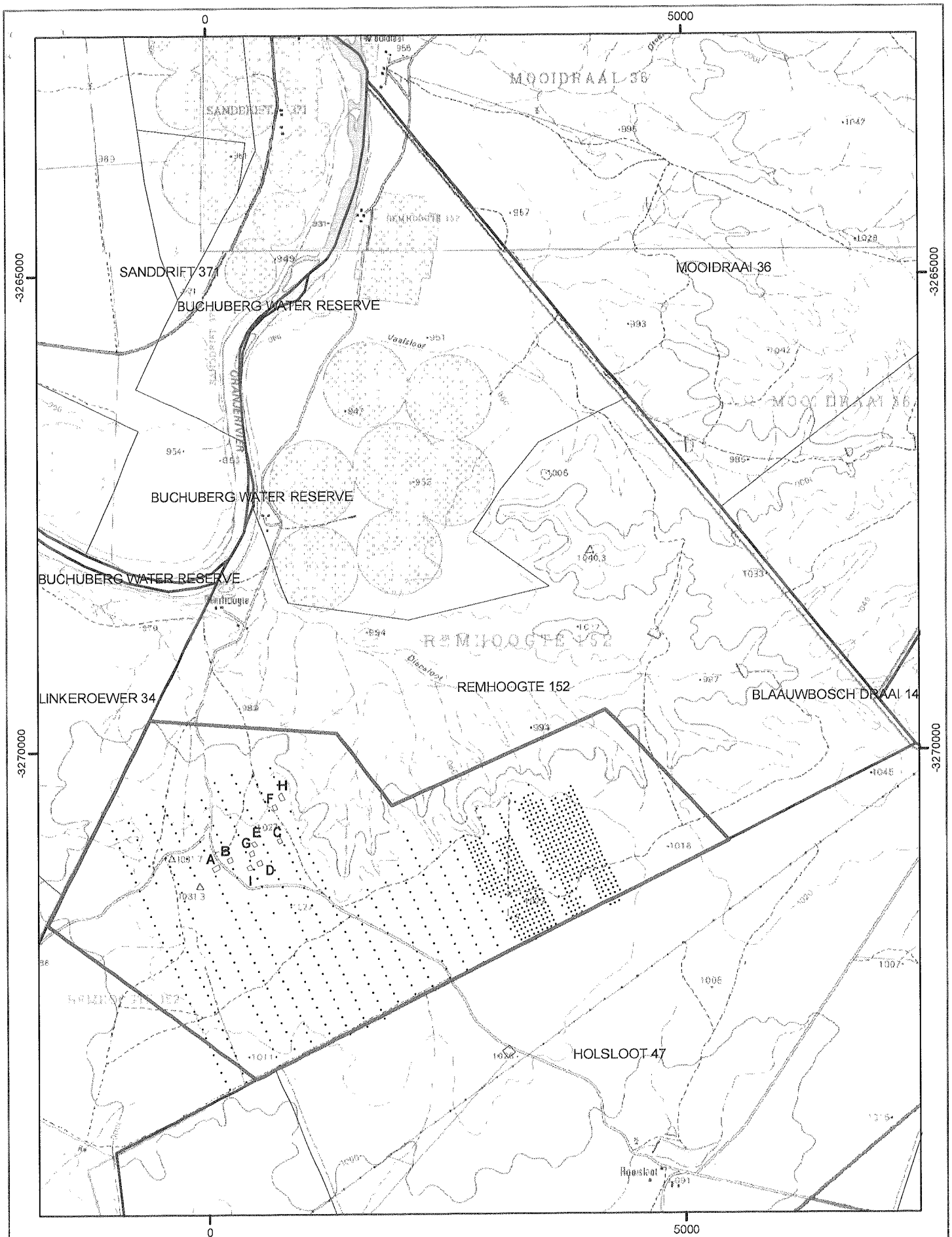
7.2 Planned sequence of mining

The proposed mining schedule is provided below. Mine blocks (Figure 5) were defined by utilising geological parameters (bedrock features, gravel type and thickness, bedrock elevation) and property boundaries. The mine blocks were determined by bulk sampling (Figure 4) done on the application area. The ore body will be mined according to an overall mining schedule guided by grade, mining costs and commodity price fluctuation as outlined below. This Schedule may therefore have to be adapted from time to time as determined by the factors listed above. Expected life of mine for Pioneer Minerals at the Remhoogte Project, based on the planned scale of operations and production rates, current mining costs and current diamond prices, is 8 years, ending in 2019. Further drilling and mining exploration within the farm could bring in additional gravel volume thereby extending life of mine.

The mining phases are as follows:

Mine Schedule			
Year	Volume	Ore type	Carats
Year 1	960,000	Rooikoppie	8,640
Year 2	960,000	Rooikoppie	8,640
Year 3	960,000	Rooikoppie	8,640
Year 4	960,000	Rooikoppie	8,640
Year 5	960,000	Rooikoppie	8,640
Year 6	960,000	Rooikoppie	8,640
Year 7	960,000	Rooikoppie	8,640
Year 8	960,000	Rooikoppie	8,640
Total	7,680,000		69,120

Figure 4: Bulk sampling sites



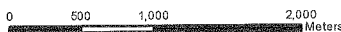
LEGEND

- Farm Boundary
- Access Road
- Intermittent Streams
- Other Road
- Contour
- River
- Mining Right Application Area
- Existing Boreholes
- Bulk Samples

COORDINATE SYSTEM INFORMATION

PROJECTION TRANSVERSE MERCATOR
 DATUM HARTBEESTHOEK 94
 SPHEROID WGS84
 CENTRAL MERIDIAN 23°E
 MAP UNITS METERS

SCALE 1 : 50 000



**Figure 4 -
Drill layout and bulk sample trenches**

PROJECT INFORMATION
 Map Document (P:\ArcGisMain\RSA\Mid Orange River\prj_remoogte\prj_Fig4_remoogte_mineapp_samples.mxd)
 2010/11/11



Figure 5: Mine blocks

FIGURE 5 - MINE BLOCKS

MAP INDEX

- Existing Boreholes
- Bulk Samples
- ▨ Rooikoppie Extents (Regional Drilling)
- ▤ Rooikoppie Extents (Infill Drilling)
- ▧ Rooikoppie Extents (API and field mapping)



Scale 1 : 35 000



TRANS HEX GROUP

Map Document: (O:\MINING RIGHTS\Remhoogte\Fig5_remhooigte_mine-grid) 2010/11/11



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Table 8.1: Process of engagement of IAPs

Project phases	Project stage	Activity and Task	Objectives	Output
Engagement of interested and affected parties	<ul style="list-style-type: none"> Notification of IAPs about the project and highlight its relationship with the previous opencast operation consultations which they will be involved in 	<ul style="list-style-type: none"> Letter of invitation to attend the meeting and background information documents about the projects will be sent to interested and affected parties. The reply slips will be included to facilitate the participation of IAPs and to assist them in registering as IAPs and recording their concerns The letters of invitations to participate in the scoping and environmental process will be categorised as follows: <ul style="list-style-type: none"> Afrikaans letters of invitations and reply slips – will mostly be distributed to adjacent landowners and the farming community around the site English letters of invitation – will mostly be distributed to regulatory and local authorities and specialist interest groups. 	<ul style="list-style-type: none"> Facilitate focused participation To gather issues and concerns concerning the project and ensure that they are addressed in the succeeding EIA 	<ul style="list-style-type: none"> Letters of invitations Background information document Comments from IAPs

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Project phases	Project stage	Activity and Task	Objectives	Output
Adverts and site notices	<ul style="list-style-type: none"> Scoping meeting to be scheduled for February 2011 	<p>Adverts and site notices will be placed as follows:</p> <ul style="list-style-type: none"> Afrikaans version English version A site notice will be erected on site Invitations to attend meetings to be English and Afrikaans in January 2011 Agendas for the meetings will be faxed to regulatory authorities to ensure adequate preparation Agendas for other meetings will be distributed at the meetings 		<ul style="list-style-type: none"> Site notices Adverts
Scoping meetings		<ul style="list-style-type: none"> The scoping meetings will be scheduled for February 2011 The minutes of the meetings, together with attendees registers will be included in the EMPR. 		<ul style="list-style-type: none"> Minutes of the meetings
Consolidation of the issues and determining specialist studies	<ul style="list-style-type: none"> Consolidate issues raise Define terms of reference for specialists Commission specialist investigations Write EMPR 	<ul style="list-style-type: none"> The issues raised will be presented Terms of reference for specialist studies will be determined (Section 9) 		<ul style="list-style-type: none"> Terms of reference Specialist reports Workshop documentation Draft EMPR

Scoping report for Remhoogte

8.1 Issues and Concerns

The issues expected to be raised are presented below.



Issues expected to be raised

- **Rehabilitation**
 - Promotion of theft due to lack of rehabilitation
 - Pits used by thieves to store stolen goods
 - Unsafe excavations due to lack of rehabilitation
- **Energy supply**
 - ❖ Loss of energy supply and power cuts due to use of power by the Mine
 - ❖ Eskom closing radial supply and to have a ringfeed system-old substation to be replaced as it is not handling demand
 - ❖ Mine to plan upfront their energy requirements so that they be captured in the new plans by eskom



Issues Raised

- **Water**
 - Depletion of water resources due to improper management –
Conserve and licence use
 - Impact on landowners due to overutilisation of a water resource
– Who bears to costs when the mine is closed- Irrigation a
community need



Issues Raised

- **Biodiversity management**
 - General biodiversity conservation
- **Social development**
 - Provision of skills
 - ❖ Beneficiation projects
 - ❖ Scholarships
 - ❖ Mine to sponsor community projects and SMME and to motivate community to be self sufficient



Issues Raised

- **IAP involvement**
 - Involvement of IAPs in the reviewing of the EMP and in the implementation
 - Mine to communicate regularly with adjacent land owners
- **Community safety**
 - Impact on the livelihood of the locals due to pollution from the mine activities
 - Lack of fencing leading livestock being trapped in mine pits
 - Community to be informed in time should there be blasting planned



Issues Raised

- **IAP involvement**
 - *Involvement of IAPs in the reviewing of the EMP and in the implementation*
 - *Mine to communicate regularly with adjacent land owners*
- **Community safety**
 - *Impact on the livelihood of the locals due to pollution from the mine activities*
 - *Lack of fencing leading livestock being trapped in mine pits*
 - *Community to be informed in time should there be blasting planned*

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9. Nature and extent of further studies required

The outstanding investigations will entail:

- Undertaking specialist studies and environmental impact assessment
- Development of Environmental Management Plan (EMP):
 - Suggested mitigation measures to eliminate, reduce and compensate for the consequences of the project on the environment;
 - An estimate of the costs linked to the implementation of the measures;
 - Where applicable, a quantification of the expected results in terms of rate of pollution and the minimal threshold of disturbances and comparison with legal standard and general practices in similar cases.

The EIA for all the specialist studies will assess the environment likely to be affected by the proposed mining operations in terms of cumulative impacts, stating negative, positive, direct and indirect impacts as per the relevant legislation. Impacts will be identified through detailed specialist investigations, use of modelling of collected data, and professional expertise. Once the impacts have been identified, they will be assessed for significance, using the criteria provided in Table 9.2. The first stage of impact assessment is the identification of environmental activities, aspects and impacts. This is supported by the identification of receptors and resources, which allows for an understanding of the impact pathway and an assessment of the sensitivity to change. The significance of the impact is then assessed by rating each variable numerically according to defined criteria as outlined in Table 9.2. The purpose of the rating is to develop a clear understanding of influences and processes associated with each impact.

Table 9.1: Provides an outline of the further phases to be undertaken for the Remhoogte Project, following scoping phase.

9.1 Specialist studies

The envisaged specialist studies based on the expected issues raised (Section 8) and anticipated environmental impacts (Section 5) are listed below.

Soils and land capability

- Determine soil physical and morphological characteristics such as depth, colour, and texture and soil structure will be noted. Classify soils according to the relevant accepted Soil Classification System. A description of the most important soil characteristics (such as the dominant soil form and family, soil depth, topsoil texture and underlying material) of the mapping units occurring will be given.
- Derive soil properties of each soil map unit will be noted. These include natural fertility, erodibility, dry land crop production potential and irrigation potential.
- The volumes of soil available for storage for later rehabilitation will be calculated for each soil map unit. The average soil depth and area occupied by each mapping unit will be calculated.
- Land capability will be assessed in terms of the local/internationally accepted standards (such as the Chamber of Mines Standards in South Africa - including arable land,

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grazing land, wilderness land and wetlands). Areas (ha) to be affected within each of these classes will be calculated.

- Determine existing crop production potential and include current yields
- Determine carrying capacity
- Determine any other impacts related to loss of crop production due to mining activities
- Map soil, land capability and land use within the areas to be affected.

Fauna and flora

- Determine areas to be disturbed to determine dominant fauna and flora species, as well as rare/endangered/threatened/invasive/alien species - plants/animals that are protected by law - also indicate any plants used for medicinal or cultural purposes - map/GPS locations - plants that might be sacred;
- Map plant communities and list species within these communities - GPS and map rare/endangered species;
- Recommend species for protection in situ, translocation or use in rehabilitation practices;
- Status of pre-mining environment: fauna and flora baseline descriptions
- Comment on the biodiversity potential of the mine site and suggested measures to promote such biodiversity

Ground water

- Determine status of pre-mining environment groundwater baseline descriptions.
- Determine groundwater assessments such as existing borehole hydrocensus done indicating aquifers, dykes, existing drinking water boreholes as well as proposed observation boreholes;
- Indicate water strike depth, depth to groundwater, blow out yield, groundwater gradient and flow direction;
- Determine monitoring data for pump test investigation and analysis to determine aquifer characteristics;
- Hydrogeological site characterisation
- Determine contamination potential of tailings material
- Predict the long term impact of the tailings dam on groundwater
- Determine the impact of water abstraction at the mine on other ground water users
- Predict the long term impact of the water abstraction on mine closure and the effects thereof on other ground water users
- Environmental Impact Assessment (EIA): an assessment of the environment likely to be affected by the proposed mining operations (with respect to groundwater impacts), including cumulative impacts - state negative, positive, direct and indirect impacts as per legislation.

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Table 9.1: Further investigations required

Project phases	Project stage	Activity and Task	Objectives	Output
Further investigations to be done		<ul style="list-style-type: none"> Commission specialists. The terms of reference for the specialist studies are presented as Section 9.1. Write baseline report Receive specialist studies and incorporate into EIA section of the EMPR Develop management measures and workshop these with the specialists and the client Consolidate report Client review 		
Feedback to stakeholders	<ul style="list-style-type: none"> Provide feedback to stakeholder 	<ul style="list-style-type: none"> Develop summary report Put draft EMPR at a central accessible place for IAPs to review Distribute reports to key regulatory authorities Have feedback meetings : 2 meetings for specialist interest groups and another meeting for regulatory authorities Consolidate comments Update draft EMPR 	<ul style="list-style-type: none"> Provide feedback on identified impacts and proposed management measures Obtain other suggested recommendation to avoid, minimize or manage the identified impacts 	<ul style="list-style-type: none"> Summary EMPR report
EMPR production	<ul style="list-style-type: none"> Update draft EMPR 	<ul style="list-style-type: none"> Update EMPR 	<ul style="list-style-type: none"> Submit EMPR to regulatory authorities 	

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Table 9.2: Impact assessment criteria

W E I G H T	Environmental Risk Profile		Hazard Effect or Severity	Scope/ Extent	Duration
	Tolerate /ALARP	High Risk - Intolerable			
6			Disastrous	Trans boundary effects	Residual
5	5		Catastrophic/major	National//Severe environmental damage	Residual
4	4	8	High/Critical/serious	Regional effect	Decommissioning
3	3	6	Medium/ slightly harmful	Immediate surrounding local/outside mine fence	Life of operation
2	2	4	Minimal/potentially harmful	slight permit deviation/on-site	Short term/ construction (6months-1yrs)
		8			
		6			

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Intolerable	High impact	A level of risk that is so high as to require significant and urgent actions to reduce its magnitude. If these risk levels cannot be reduced to ALARP or tolerable level, the project objective and operating philosophy must be fundamentally reviewed by the management. Put management measures in place.
Tolerable/ALARP	Medium impact	Improve current management measures / Tolerable if reduction is impracticable or if cost are grossly disproportionate
Maintain	Low impact	Maintain current mitigation measures / maintain assurance that risk remains at this level

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Appendix 1: Process flow chart

