

ENVIRONMENTAL IMPACT ASSESSMENT

For the Proposed GOPE DIAMOND MINING PROJECT, BOTSWANA

BACKGROUND INFORMATION DOCUMENT

December 2007

Prepared for:
Gope Exploration Company



Prepared by:
MARSH ENVIRONMENTAL SERVICES
A Division of Marsh Vikela (Pty) Ltd

SECTION 1: INTRODUCTION

Before any activity that may impact upon the environment may be undertaken, environmental authorisation must be obtained from the relevant authorities. The process to obtain environmental authorisation, is prescribed in the Environment Impact Assessment Act (EIA Act), Act No 6 of 2005. The purpose of these regulations is to protect sensitive environments and the interests of affected communities, organisations and individuals. These regulations ensure that environmental impacts are thoroughly assessed, documented and minimised as far as possible, before the competent authority will allow the development to commence. The authority may also deny the application to prevent activities that may be detrimental to the environment or the health of individuals. Figure 1.1 illustrates the environmental authorisation process set out according to the EIA Act.

Gope Exploration Company has appointed Marsh Environmental Services (A division of Marsh Vikela (Pty) Ltd) (MES), to conduct the legislated Environmental Impact Assessment (EIA) process, of which a stakeholder engagement process is inherent. The purpose of the process is to inform all stakeholders and Interested and Affected Parties (I&APs) of the proposed mining activity that Gope Exploration Company wishes to implement and to afford everyone who is interested and / or affected, the opportunity to voice their opinions.

Purpose of this Document

This Background Information Document (BID) serves to provide all I&APs with information relevant to the project and facilitate a clear understanding of the extent of the proposed activity, the decision making process and the role of the stakeholders and I&APs in the decision making process. Furthermore, it provides I&APs with the opportunity to register with MES as an I&AP in order to be kept informed of the project development. In addition, it provides stakeholders and I&APs with an opportunity to comment on the proposed Gope Diamond Mining Project.

The Proposed Activity

Gope Exploration Company (owned by Gem Diamonds (Pty) Ltd) is proposing to develop an open pit diamond mine (Gope Diamond Mining Project) in the Ghanzi District, Central Kalahari Game Reserve, Botswana. To comply with the above regulations, environmental authorisation is being applied for under Botswana's EIA Act. Gope Exploration Company is in the process of updating an existing Environmental Impact Assessment (EIA) conducted by De Beers Consolidated Mines Limited (1998), and will undertake the full EIA process as legislated.

The Stakeholder Engagement Process

The objective of the stakeholder engagement process is to inform, consult, involve and empower I&APs, to ensure a joint effort by stakeholders, technical specialists, the project proponent and relevant authorities, to identify issues and concerns as well as possible alternatives regarding the proposed activity and to enable authorities to make informed decisions regarding the proposal.

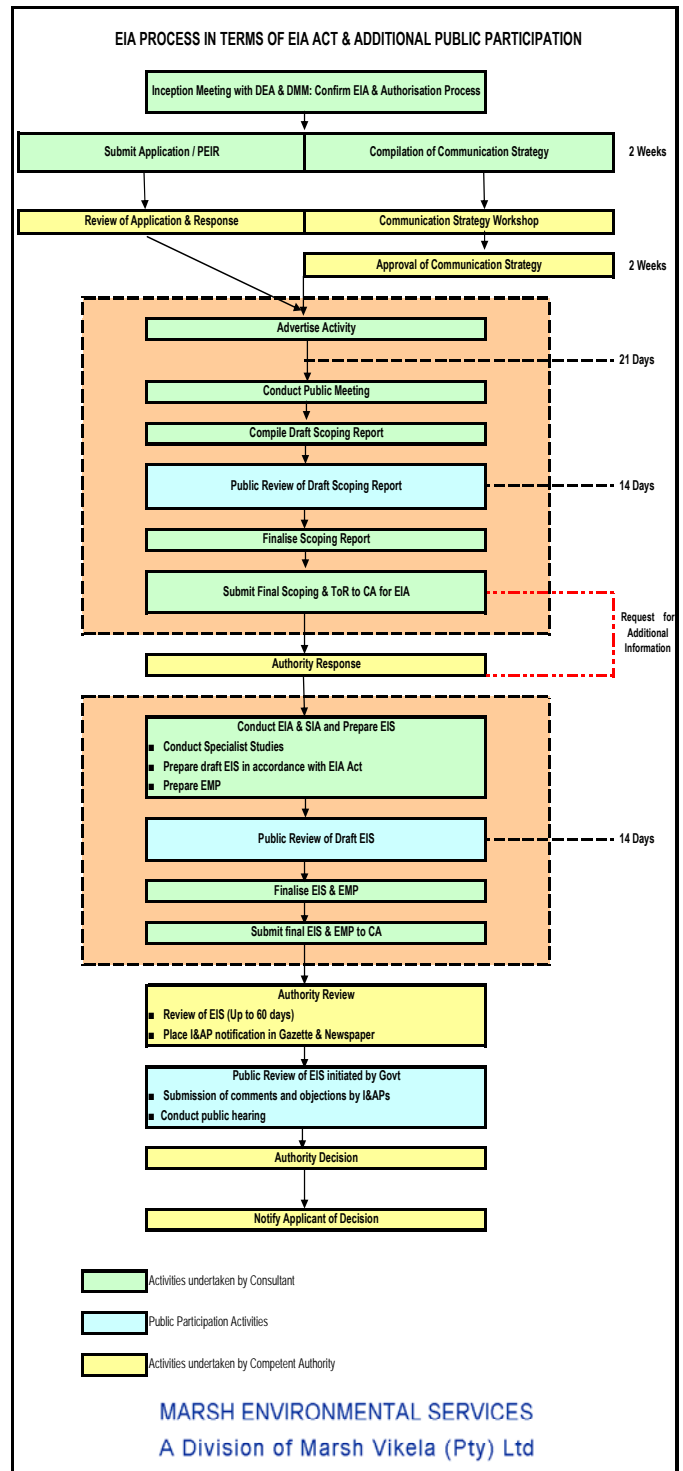


Figure 1.1: Flow Diagram Showing the EIA Process.

PROJECT TEAM

Project Proponent



Gem Diamonds Limited is a diamond mining company with a balanced portfolio of a Kimberlite mine, alluvial mine, development projects and long-term prospects. Established in July 2005, Gem Diamonds is pursuing an accelerated growth strategy and aims to become one of the world's leading diamond producers.

In February 2007, Gem Diamonds joined the Main Board of the London Stock Exchange (trading under the code GEMD). The company also recently announced the acquisition of 100% of the Gope Exploration Company (Pty) Ltd (Gope). Gope was originally set up as a joint venture by De Beers Prospecting (Pty) Ltd (De Beers) and Falconbridge Exploration Botswana (Pty) Ltd (Falconbridge, a subsidiary of Xstrata plc) to explore a known Kimberlite deposit in the Gope region of central Botswana.

Gope Exploration Company Project Team

Haile Mphusu
Managing Director

Howard Marsden
Operations Manager

Project Environmental Consultants

MARSH ENVIRONMENTAL SERVICES A Division of Marsh Vikela (Pty) Ltd

MES, a division of Marsh Vikela (Pty) Ltd, is an environmental service provider to Southern African and international government, business and industry, and is committed to enhancing environmental investigations through pro-active risk management. MES utilises a wide network of specialist services allowing a comprehensive solution to any environmental problem to be offered. MES has a particularly strong focus on project management, technical solution generation and review, and strategic environmental management.

MES EIA Project Team

James Brice
Project Director
Anneli Botha
Project Leader and Public Participation Co-ordinator
Pierre Joubert
Project Manager
Enviro Legal
Sally-Ann du Preez
Kerry Quinn
Environmental Consultant and Specialist Team Co-ordinator
Anita Leong
Environmental Consultant
Pedro Kgobe
Environmental Consultant
(Marsh Environmental Services – Botswana)

Specialists:

Geology / Soils Assessment

Earth Science Solutions

Ian Jones

Climate & Topography

MES

Anita Leong

Biodiversity Assessment

Bathusi

Riaan Robbeson

Fauna Assessment

Ecocheck

Dewald Kamfer

Visual Impact Assessment

MES

Lizelle Prosch

Surface Water & Engineering

Jones & Wagner

Chris Waygood

Groundwater

Rison Groundwater Consulting

Marius van Biljon

Air Quality Assessment

Bohlweki Environmental

Raylene Watson

Archaeology & Heritage Assessment

Archaeology Africa

Polke Birkholtz

Social Impact Assessment

Social Impact Assessment and Policy Analysis Corporation

David Cornie

Economic Assessment

Demacon

Hein du Toit

Waste Management

MES

Jonathan Sevitz

SECTION 2 THE PROPOSED ACTIVITY

Project Background

The proposed Gope Diamond Mining Project is located within the Central Kalahari Game Reserve (CKGR), in the Ghanzi District of Botswana (Figure 2.1). The site is approximately 45km west of the CKGR's eastern boundary and the geographical coordinates for Gope are latitude 22°38.4'S and longitude 24°48.07'E. The site comprises of a proposed mining license area of approximately 60km². The footprint of approximately 3,200 ha is expected to be directly impacted by mining activities.

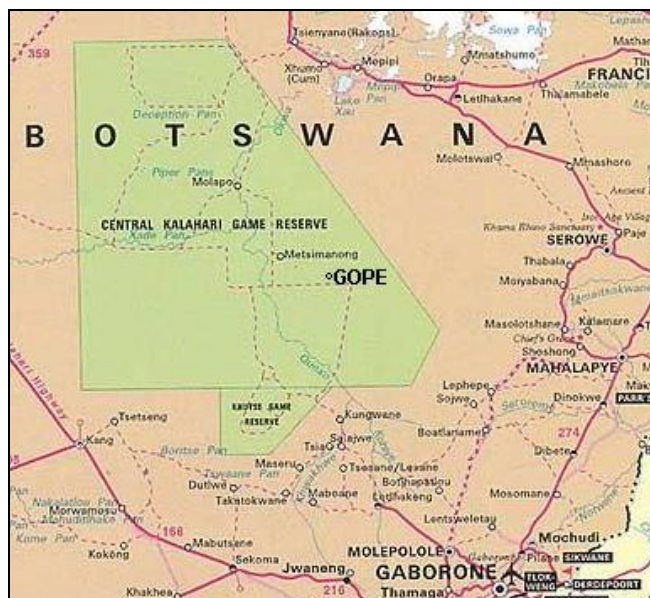


Figure 2.1: Locality of Proposed Gope Diamond Mining Project

The Diamond Mining, Metallurgical, Recovery and Cleaning Process

Figure 2.2 illustrates the Diamond Mining, Metallurgical and Recovery Process. The processes included in the operation are as follows:

Mining Method

- Sand Stripping
- Open Pit Development
- Ore Hauling to Processing Plant

Metallurgical Process

- Primary Crushing
- Autogenous Milling
- Dense Media Separation Concentration

Recovery Process

- Diamond Recovery

Cleaning Process

- Diamond Cleaning by Acidisation

Mining Method

Sand Stripping

- Before open pit development can commence, unconsolidated sand material overlying the open pit area will be stripped using earth moving equipment.
- Sand will be hauled out of the pit and conveyed to a dump.

Open Pit Development

- Hard rock mining will commence from 80m below surface level.
- Rock will be drilled and blasted through successive benches to develop the open pit.

Ore Hauled to Processing Plant

- Waste material (Kimberlite and basalt rock) will be disposed of on waste rock dumps, while diamond bearing material (Kimberlite ore) will be hauled to the processing plant on the surface using heavy duty haulage trucks.
- The waste rock dumps are expected to reach a height of 40 meters.
- Production rate is estimated at 6 million tonnes of kimberlite per year.
- Over the mine's estimated 17 year life time 262 million tonnes of waste material comprising:
 - 108 million tonnes of sand and other Kalahari Beds deposits, and
 - 154 million tonnes of basalt, will be generated.

Metallurgical Process

Figure 2.3 illustrates the mineral processing plant. Inputs into the plant include electricity, water and other raw materials to extract the diamonds from the kimberlite.

Primary Crushing

- The diamond bearing material (Kimberlite ore) will be crushed to less than 250mm in size.
- This is done in order to convey and stockpile the material as well as enable the subsequent unit process of autogenous milling to accept the material.

Autogenous Milling

- The ore will then undergo an autogenous milling process.
- This process involves the use ore to abrade itself thereby reducing its size and liberating the diamonds.
- The mill product gets separated into a finer slimes fraction (-1.5mm) and correctly sized material (-25mm + 1.5mm).
- The finer material gets disposed of in the slimes dam, and the correctly sized material containing the diamonds, undergoes Dense Medium Separation.

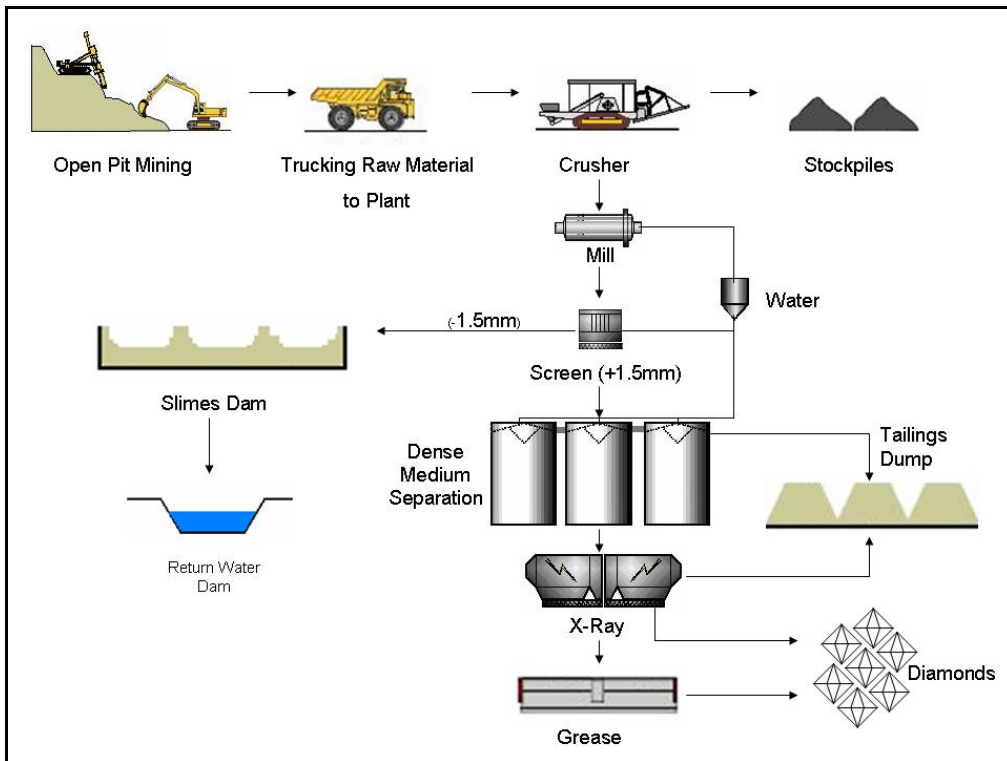


Figure 2.2: The Diamond Mining, Metallurgical, and Recovery Process

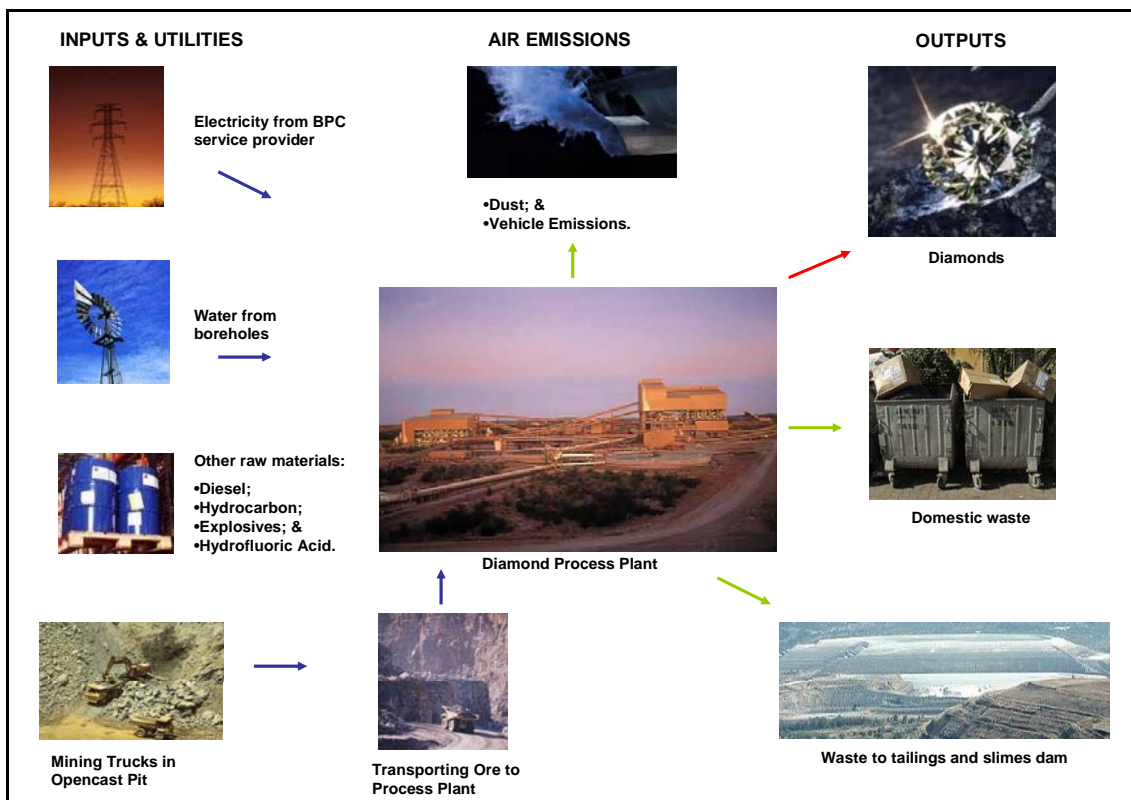


Figure 2.3: Input and Output Diagram for the Mining Operation

Dense Media Separation Concentration (DMS)

- Liberated diamonds are then concentrated further by separating them from the waste material.
- The DMS process uses the density difference between diamonds (3.5 g/cc) and the main constituents of kimberlite ore (2.7 g/cc) to undertake a separation i.e. the process enables the diamonds to sink and the waste to float.
- The DMS waste is then deposited on the main tailings dump and the DMS concentrates report to the next stage of diamond recovery.
- Approximately 88 million tonnes of ore will be treated. In this process:
 - 48 million tonnes of slimes material, and
 - 40 million tonnes of tailings material will be produced.

Diamond Recovery

- After undergoing the DMS process, a further four sequential diamond recovery unit processes are required to produce the final product of pure diamonds, namely:

1. X-Ray Recovery;
2. Grease Recovery;
3. Magnetic Separation, and
4. Hand Sorting.

1. X-Ray Recovery

- The DMS concentrates are exposed to X-rays. The process relies on the fact that when exposed to x-rays diamonds fluoresce whilst the majority of the waste material still associated with them does not.
- In this process, diamonds as well as some waste material (X-ray machine tailings) is recovered.

2. Grease Recovery

- Because some diamonds do not fluoresce under X-rays as well as the fact that the X-ray machines are not 100% efficient, it is necessary to retreat the X-ray machine tailings using a different process.
- The material is washed over grease belts. Diamonds stick to the grease whilst the majority of the waste material will not.
- The diamonds are degreased by washing with a detergent and they are stored before reporting to the next unit process.

3. Magnetic Separation

- The concentrates from the X-ray machines and the grease belts are dried and screened into size fractions. The larger fractions all report directly to the hand sorting process, but the fines fraction still contains too much waste material and a further stage of mass reduction is required.
- This fine material is therefore treated over a magnetic separator. This separates the diamonds, which are non-magnetic, from the waste material which is magnetic.

4. Hand sorting

- Inside gloveboxes, the diamonds are picked out from the remaining waste and then transported to the accounting glovebox by vacuum.
- Here, the diamonds are weighed and counted.

Diamond Cleaning

- Rough diamonds often have coatings on them that can make evaluation difficult. The diamonds are therefore cleaned by heating them in mixtures of hydrochloric, nitric and hydrofluoric acids.
- Cleaning is done in fume cupboards under strict security and safety controls. The fumes are captured in a gas scrubber and, after mixing with any waste acids, are neutralised and disposed of into the slimes dam.



Figure 2.4 and 2.5: The Proposed Gope Diamond Mining Project Site

Ancillary Infrastructure

Additional facilities to be included at the proposed mine include:

- Main entrance gate, security and freight area;
- Water reservoir and treatment works for process and potable water;
- A mine clinic, mine camp, offices and accommodation units; and
- Interconnecting access and haul roads and an airstrip.

Other associated infrastructure include a high voltage power line, microwave communication towers, an all weather road and potentially a well field for additional water supply should the pit dewatering prove insufficient. This is to be confirmed through detailed hydrogeological models.

Road

The project team is currently investigating two routes as options to provide access to the mining site:

- From Lephepe (northeast of Gaborone), following the cut line in a north-westerly direction along the cut line on the eastern boundary of the CKGR and then west into the reserve to the proposed mine site. The length of this option is approximately 153km from Lephepe to the mine site;
- From Kaudwane along an existing gravel track to the Gope site. The route travels in a north easterly direction in the reserve and is approximately 90km long.

In the interim and for the duration of the construction phase of the project, it is proposed that the existing route from Lephepe be maintained in such a manner as to facilitate the temporary access to the site. Various options to facilitate this maintenance are being assessed at present.

Power Supply

Power to the mining site will be supplied by the Botswana Power Corporation. A feasibility study is currently being undertaken to determine the most suitable route and infrastructure for the powerline.

Waste and Effluent Management

Sewage and domestic liquid waste will be disposed of into a septic tank and treatment works. The plant will consist of containerised treatment plants in modular format. The sewage works will be operated according to standard procedures.

All non-biodegradable and toxic industrial waste i.e. scrap metal, tyres, used machinery oils and other lubricants and chemicals, will be disposed of at a licensed landfill site. Various alternative sustainable disposal methods regarding the disposal of biodegradable domestic waste are being investigated.

Water Supply

Water will be obtained through the construction of a ring of dewatering boreholes around the open pit. These boreholes will progressively dewater the pit in order to ensure safe working conditions. The water will be utilised in the plant. Hydrogeological investigations and aquifer modelling evaluations are currently underway in order to determine the sustainability of the dewatering for the life of the mine. Should it become evident that more water will be required, the use of the well field option will be re-assessed.

It is proposed that potable water is produced using the reverse osmosis (R.O.) process. This water will be for domestic use and concrete mixing.

Phases of Development

Construction Phase

The construction phase will progress over a period of 3 - 3.5 years and will include the following main activities:

- Construction of the various facilities at the mine site, including the plant and mine camp;
- Erection of a security perimeter fence;
- Drilling and installation of water supply infrastructure. A decision will be taken on the requirement of a well field once the detailed hydrogeological model has been completed;
- Pre-stripping mining of sand cover and basalt waste rock;
- Construction of the main access road; and
- Construction of the power supply and installation of the microwave repeater stations.

Operational Phase

The operational phase will commence immediately upon completion of the construction of the mine facilities and infrastructure. The life of the mine is estimated to be 17 years.

Ongoing remediation will be undertaken for applicable structures throughout the life of the mine.

Decommissioning Phase

End of life of mine remediation will commence towards the end of the mine operation and will proceed for a 3 year period beyond the life of the mine. Closure will be applied for thereafter and monitoring will continue until the relevant authorities are satisfied that a closure certificate can be issued.

Employment, Health and Safety

Many of the jobs will require skilled labour, both during the construction and operational phases of the proposed new mine. Gope will strive to hire qualified local individuals and will implement a training programme to allow others to become qualified at the proposed facility.

The proposed mine will employ approximately 750 people during construction and 230 people during operations. The company has indicated that it will continue to uphold the health and safety standards at the proposed mining development including those of International Organisation for Standardisation for Quality and Environmental Management.

The mine area (including the open pit, plant, tailings and slimes dam area) will be fenced to prevent danger to both people and animals.

SECTION 3 HOW DOES THIS AFFECT YOU

What Can You Do?

As previously stated, the purpose of this document is to inform the public of the proposal by Gope Exploration Company to develop and operate a diamond mine. As part of the Environmental Impact Assessment (EIA), the purpose of the Public Participation Process is to ensure that the rights and needs of all parties are taken into account, as well as to protect the interests of the public, before a decision concerning the proposed development is taken.

Interested and concerned members of the public have the right and the responsibility to participate in the EIA process. Marsh Environmental Services and Gope Exploration Company will assist members of the public to participate in this process, and formulate all comments and concerns in a manner that will ensure they will be afforded due attention by the relevant parties – including MES, Gope Exploration Company and the relevant government authorities.

How to get Involved

Included with this document is a Registration/Comment form. By completing the attached form and sending it to Anneli Botha at MES (details provided in the right-hand column), you will be registered as an Interested and Affected Party (I&AP), and will thereafter be informed of all decisions made by the authorities regarding the proposed mine, as well as be invited to a public meeting.

A Public Participation meeting will be held on at the following times and locations.

Date of Public Meeting	Time	Venue
22 January 2008	10:00 am	Lephepe
23 January 2008	10:00 am	Kaudwane
25 January 2008	10:00 am	New Xare
29 January 2008	10:00 am	Otse
30 January 2008	10:00 am	Xere
31 January 2008	6:00 am	Metsamanong
1 February 2008	6:00 am	Molapo
2 February 2008	6:00 am	Kukama

All I&APs are invited to attend this meeting and will have the opportunity to discuss the proposed activity with the project proponent and consultants.

We would also greatly appreciate your input with regards to the naming of the proposed mine. Kindly suggest a suitable name in the space provided on the attached form. The best and most appropriate name will thereafter be chosen and used in the naming of the mine.

You are also welcome to contact the relevant department involved in reviewing the application for the proposed mine. The department and their relevant contact details are provided in the right-hand column.

How to Obtain Further Information?

Registering as I&AP will ensure that you are placed on the database of persons to be informed of the EIA process. Alternatively, you may access documents as and when they become available at <http://www.marsh-africa.com/industry/environmental.htm> and follow the "Current projects for public review" link.

Who to Contact

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2010

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Pedro Kgobe

Senior Environmental Scientist

Marsh Environmental Services (Marsh Botswana)

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Department of Environmental Affairs Ministry of Environment, Wildlife and Tourism

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Botswana

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Fax: + 267 390 2051/ 391 4687
Email: daniku@gov.bw

REGISTRATION \ COMMENT FORM

NOTICE OF SCOPING AND SOCIAL & ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED GOPE DIAMOND MINING PROJECT, GHANZI DISTRICT, BOTSWANA

PLEASE COMPLETE AND RETURN THIS FORM SO THAT MARSH ENVIRONMENTAL SERVICES MAY HAVE YOUR FULL CONTACT DETAILS FOR OUR INTERESTED & AFFECTED PARTIES DATABASE

PARTICULARS OF INTERESTED & AFFECTED PARTY

Name:			
Organisation (if applicable):			
Postal Address:			
		Post Code:	
Street Address:			
		Post Code:	
Telephone:		E-Mail:	
Mobile / Cellular Phone:		Facsimile:	
Language Preference:			

COMMENTS

<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>
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SUGGESTIONS: NAME OF PROPOSED MINE

<p>.....</p> <p>.....</p>

If you are aware of other parties who should be contacted in this process, please provide their details here:

<p>.....</p>

Please add additional pages if required.

Return to: Ms. Anneli Botha (Project Leader - Gope)
Consulting Manager - Mining Services

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