HARMONY GOLD MINING COMPANY LIMITED: KALGOLD MINE – OPTIMISATION PROJECT DRAFT SCOPING REPORT UNDER NEMA, 1998

Locality: Mafikeng DEDECT Ref. No: NWP/EIA/15/2013 Date: September 2013





DRAFT SCOPING REPORT

HARMONY GOLD MINING COMPANY LTD

KALGOLD MINE

OPTIMISATION PROJECT EIA

Locality: Mafikeng, North West Departmental Ref No: NWP/EIA/15/2013

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PROJECT DETAILS

North West Department of Economic Development, Environment, Conservation and Tourism

Reference No.: NWP/EIA/15/2013

Project Title: Harmony Kalgold Mine – Optimisation Project

Project Number: HAR-KAL-12-07-27

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REFERENCES

Auctus PM & Consulting. 2011. Harmony Gold Mining Ltd. Kalgold Mine Hydrogeological Study. Final Report. July 2011.

Census 2011. Municipal report: North West. Pretoria: Statistics South Africa, 2012

Climate report: Mafikeng, South Africa. 2013. Accessed from <u>www.climatedata.eu</u> on24 July 2013.

Conservation of the Agricultural Resources Act, 1983 (Act 43 of 1989), Republic of South Africa.

Department of Environmental Affairs and Tourism, 2006: *Guideline 5: Assessment of Alternatives and Impacts in support of the Environmental Impact Assessment Regulations, 2006. Integrated Environmental Management Guideline Series*, Department of Environmental Affairs and Tourism, Pretoria.

Department of Water Affairs and Forestry (1996). South African Water Quality Guideline Series. Second edition, 1996.

Department of Water Affairs and Forestry (1999) a. Resource Directed Measures for Protection of Water Resources. Volume 4. Wetland Ecosystems Version 1.0, Pretoria.

Department of Water Affairs and Forestry (1999) b. Resource Directed Measures for Protection of Water Resources. Volume 1. River Ecosystems Version 1.0, Pretoria.

Department of Water Affairs and Forestry (DWAF) (1996). South African Water Quality Guidelines (second edition). Volume 6: Agricultural water use: Aquaculture.

Department of Water Affairs and Forestry and the Department of Health, 1998, Quality of Domestic Water Supplies, Volume 01: Assessment Guide.

Department of Water Affairs and Forestry, 1996. South African Water Quality Guidelines, Volume 01: Domestic Use.

Department of Water Affairs and Forestry, 1996. South African Water Quality Guidelines, Volume 07: Aquatic Ecosystems.

Department of Water Affairs and Forestry, 2008. Licence in terms of Chapter 4 of the National Water Act, 1998 (Act 36 of 1998). Licence No. 10080315.

Department of Water Affairs and Forestry. Best Practice Guidelines Series G3: General Guidelines for Water Monitoring Systems.

Desmet, P; Schaller, R; & Skowno, A. 2009. North West Province Biodiversity Conservation Assessment Technical Report, Version 1.2. The North West Province Department of Agriculture, Conservation and Environment.

Development Facilitation Act, 1995 (Act 67 of 1995), Republic of South Africa.

Environment Conservation Act, 1989 (Act 73 of 1989), Republic of South Africa.

Government Gazette No 20526, 8 October 1999. Government Notice No 1191. General Authorisations in terms of Section 39 of the National Water Act, 1998 (Act 36 of 1998).

Health Act, 1977 (Act 63 of 1977), Republic of South Africa.

Jones & Wagner Consulting Civil Engineers, 2012: Kalgold Gold Mine North West Province, Hydrogeological and hydrological assessment potential water resources.

Miller, S. 2013: 1st Phase Cultural Heritage Resources Impact Assessment for a proposed extension of operations on portions of the farm Spanover 552 IO at the existing mine Kalgold in the North West Province for Harmony Kalgold Mining Operations, As well as updating of the heritage remains on the existing mine. African Heritage Consultants CC. July 2013.

Mine Health and Safety Act, 1996 (Act 26 of 1996), Republic of South Africa.

Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002), Republic of South Africa.

Mineral and Petroleum Resources Development Regulations, 2004 (R.527, Government Gazette No 26275 of 23 April 2004), Republic of South Africa.

Mucina, L. and Rutherford M.C. 2006: The Vegetation of South Africa, Lesotho and Swaziland.

National Environmental Laws Amendment Act, 2008 (Act 44 of 2008), Republic of South Africa.

National Environmental Management Act, 1998 (Act 107 of 1998) Environmental Impact Assessment Regulations, 2010 (R.543, Government Gazette No. 33306 of 18 June 2010), Republic of South Africa. National Environmental Management Act, 1998 (Act 107 of 1998) Listing Notice 1: List of activities and competent authorities identified in terms of Section 24(2) and 24D, 2010 (R.544, Government Gazette No. 33306 of 18 June 2010), Republic of South Africa.

National Environmental Management Act, 1998 (Act 107 of 1998) Listing Notice 2: List of activities and competent authorities identified in terms of Section 24(2) and 24D, 2010 (R.545, Government Gazette No. 33306 of 18 June 2010), Republic of South Africa.

National Environmental Management Act, 1998 (Act 107 of 1998) Listing Notice 3: List of activities and competent authorities identified in terms of Section 24(2) and 24D, 2010 (R.546, Government Gazette No. 33306 of 18 June 2010), Republic of South Africa.

National Environmental Management Act, 1998 (Act 107 of 1998), Republic of South Africa.

National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004), Republic of South Africa.

National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004), Republic of South Africa.

National Environmental Management: Waste Act, 2008 (Act 59 of 2008) List of Waste Management Activities that have, or are likely to have a detrimental effect on the environment, 2009 (R.718, Government Gazette 32368of 3 July 2009), Republic of South Africa.

National Environmental Management: Waste Act, 2008 (Act 59 of 2008), Republic of South Africa.

National Water Act, 1998 (Act 36 of 1998), Republic of South Africa.

Natural Heritage Resources Act, 1999 (Act 25 of 1999), Republic of South Africa.

Promotion of Access to Information Act, 2000 (Act 2 of 2000), Republic of South Africa.

Promotion of Administrative Justice Act, 2002 (Act 3 of 2000), Republic of South Africa.

Ratlou Local Municipality. 2013. Integrated Development Plan 2012-2017. Republic of South Africa.

Shangoni Management Services. 2013. Harmony: Kalgold – Alien eradication plan. Remainder of the farm Spanover 552 IO. June 2013.

Smith, M. E. 2004. Applying the "Seven Questions" to Heap Leaching. *The Mining Record.* USA, June 2004.

0

South African National Biodiversity Institute. 2009. Biodiversity GIS Maps – North West. Accessed from bgis.sanbi.org on 24 July 2013.

Standards South Africa (SABS), 2006. South African National Standard: Drinking Water. (SANS241:2006).

Stats SA. 2012. Census 2011 Municipal Report – North West. Report no. 03-01-54, 83pp. Pretoria: Statistics South Africa.

The Constitution of the Republic of South Africa, 1996 (Act 108 of 1996), Republic of South Africa.

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DEFINITIONS

Environment

The surroundings (biophysical, social and economic) within which humans exist and that are made up of

- the land, water and atmosphere of the earth;
- micro-organisms, plant and animal life;
- any part or combination of (i) and (ii) and the interrelationships among and between them; and
- the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.

Environmental Aspects

Elements of an organisation's activities, products or services that can interact with the environment.

Environmental Degradation

Refers to pollution, disturbance, resource depletion, loss of biodiversity, and other kinds of environmental damage; usually refers to damage occurring accidentally or intentionally as a result of human activities.

Environmental Impacts

Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's activities, products or services.

Environmental Impact Assessment

A study of the environmental consequences of a proposed course of action.

Environmental Impact Report

A report assessing the potential significant impacts as identified during the environmental impact assessment.

Environmental impact

An environmental change caused by some human act.

Land use

The various ways in which land may be employed or occupied. Planners compile, classify, study and analyse land use data for many purposes, including the identification of trends, the forecasting of space and infrastructure requirements, the provision of adequate land area for necessary types of land use, and the development or revision of comprehensive plans and land use regulations.

Pollution Prevention

Any activity that reduces or eliminates pollutants prior to recycling, treatment, control or disposal.

Public Participation Process

A process of involving the public in order to identify needs, address concerns, in order to contribute to more informed decision making relating to a proposed project, programme or development.

Topography

Topography, a term in geography, refers to the "lay of the land" or the physio-geographic characteristics of land in terms of elevation, slope and orientation.

Vegetation

All of the plants growing in and characterising a specific area or region; the combination of different plant communities found there.

Waste

Waste is unwanted or undesired material left over after the completion of a process. "Waste" is a human concept: in natural processes there is no waste, only inert end products.

Water Resource

- a river or a spring;
- a natural channel in which water flows regularly or intermittently;
- a wetland, lake or dam into which, or from which, water flows;
- any collection of water which the Minister may declare to be a watercourse; and
- surface water, estuaries and aquifers (underground water).

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All water bodies in the hydrological cycle, including underground water, are regarded as water resources.

Water Course

- a river or spring;
- a natural channel or depression in which water flows regularly or intermittently;
- a wetland, lake or dam into which, or from which water flows; and
- any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse as defined in the National Water Act, 1998 (Act No. 36 of 1998).

Water Use

Water use includes taking and storing water, activities which reduce stream flow, waste discharges and disposals, controlled activities (activities which impact detrimentally on a water resource), altering a watercourse, removing water found underground for certain purposes, and recreation.

Wastewater

Wastewater is water containing waste, or water that has been in contact with waste material.

- Wastewater includes
- domestic wastewater
- biodegradable industrial wastewater
- industrial wastewater.

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ABBREVIATIONS

AMD	– Acid Mine Drainage
BID	 Background Information Document
BIF	- Banded Iron Formation
СВА	- Critical Biodiversity Area
CRR	 Comments and Response Report
DEDECT	- North West Department of Economic Development, Conservation and Tourism
DWA	- Department of Water Affairs
DMR	 Department of Mineral Resources
EAP	 Environmental Assessment Practitioner
EIA	 Environmental Impact Assessment
EIS	 Ecological Importance and Sensitivity
EIR	 Environmental Impact Report
EMF	 Environmental Management Framework
EMP	 Environmental Management Programme
GN	- Government Notice
IWULA	 Integrated Water Use Licence Application
IWWMP	 Integrated Water and Waste Management Plan
I&AP	 Interested and Affected Party
kV	– Kilovolts
LOM	– Life of Mine
MAMSL	– Metres Above Mean Sea Level
MAP	- Mean Annual Precipitation
MAE	 Mean Annual Evaporation
MM	– Millimetres
MPRDA	 Mineral and Petroleum Resources Development Act, Act 28 of 2002
MT	– Million Tons
NEMA	 National Environmental Management Act, Act 107 of 1998 as amended
PPP	 Public Participation Process
R	- Regulation
RE	- Remaining Extent
ROM	– Run of Mine
SANBI	 South African National Biodiversity Institute
SASS	 South African Scoring System
S&EIR	 Scoping and Environmental Impact Report

EXECUTIVE SUMMARY

The Applicant

Kalgold Mine is a gold mine that is managed by Harmony Gold Mining Company Limited, located approximately 55km southwest of the town Mafikeng and 60km northeast of the town Stella in the Ratlou Local Municipality within the North West Province of South Africa. Nearby villages include Kraaipan (15km to the south), Setlagole (18km to the southwest) and Mareetsane (20km to the east).

Background description

Kalgold Mine first started operation during the mid-1990s where it focussed on mining of the D-zone ore body. The economic ore body was mined out by a single open pit operation, along a strike length of 1300m and to a depth of approximately 290m below surface. The mining operation at D-zone ceased in March 2009. Mining at Kalgold Mine has continued despite the operation cessation at D-zone. The A-zone, Windmill zone and Watertank zone are relatively new opencast operations, from which a remaining total resource estimated at 3.9 million ounces exists.

Project description

Harmony: Kalgold Mine - Optimisation Project includes the proposed construction of the waste rock dump, heap leach, low-grade stockpile and various associated infrastructure.

- The proposed waste rock dump will have the capacity to store 24 million tons (Mt) of waste rock and the footprint area for the waste rock dump will be 98 hectares (ha) in size.
- The proposed heap leach will have a capacity of 24 Mt and cover an area of 51ha.
- Infrastructure associated with the heap leach includes a pregnant pond, emergency pond and barren pond.
- The low grade stockpile will have the capacity to store 30 Mt of low grade ore and cover an area of 65.3ha.
- The infrastructure area will cover 83ha. The infrastructure area will include a workshop and office complex, crushing and screening plant, diesel tanks, power lines, sewage system, potable water system, topsoil stockpiles and high grade stockpiles.
- Various haul roads of approximately 25 metres wide will be constructed. Some of the existing roads will be lengthened and widened.
- Chemicals such as cyanide and lime will be stored on site for use at the heap leach.
- An explosives storage area will be constructed on site.
- Pollution control dams and clean water tanks will be constructed to contain all water as part of the clean and dirty water system.

- Storm water containment infrastructure will be constructed to contain all storm water run-off.
- Trenches and/ or berms will be constructed as part of the dirty and clean water systems.

Legal requirements

As part of the proposed optimisation project, listed activities defined under the National Environmental Management Act, Act 107 of 1998 (NEMA, 1998) and the regulations there under will take place. Relevant listed activities triggered by the proposed activities are:

- GN. No. R 544, Listing Notice 1, 18 June 2010:
 - Activity no. 9 (i) and (ii); 13; 22; 26 and 47 (i) and (ii).
- GN. No. R 545, Listing Notice 2, 18 June 2010:
 - Activity no. 5 and 26.
- GN. No. R 546, Listing Notice 3, 18 June 2010:
 - Activity no. 19 (a)(i) and (ee); 14 (a)(i); 12 (a) and (b); 13 (a), (c) (i)(cc) and (ee); 10 (a) (i) and (ee) and 4(a) (i)(ee).

In order to obtain environmental authorisation, a Scoping Report and an Environmental Impact Assessment Report (EIR) must be compiled as described in terms of Regulations 26 to 35 of the Environmental Impact Assessment Regulations, 2010 promulgated in terms of Section 24(5), 24M and 44 of the NEMA, 1998.

It is the intention of this Scoping Report (which has been compiled in terms of the NEMA, 1998) to provide the necessary information pertaining to the proposed activities associated with the project, as required in terms of the Environmental Impact Assessment Regulations (EIA Regulations R543: EIA Regulations in terms of Chapter 5 of the NEMA, 1998, dated June 2010) under the NEMA, 1998. This Scoping Report intends to highlight all information relevant to the proposed optimisation project only, since the existing operations has been fully described in the approved Environmental Impact Assessment (EIA) and Environmental Management Programme (EMP) Reports under the NEMA, 1998 and the Mineral and Petroleum Resources Development Act, Act 28 of 2002 (MPRDA, 2002) respectively. The following EMP's are in place for mining activities at Kalgold Mine:

- D-zone EMP, dated April 2003, approved by the DMR;
- Watertank, A-zone and Windmill EMP, dated July 2008, approved by the DMR in 2009, reference number NW30/5/1/2/3/2/1/77EM; and
- Closure Plan for D-Zone, dated 2011, the DMR is still in the decision making process.

Anticipated impacts

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For the purpose of the Scoping report it is required by Regulation 28 (g) (of Regulation 543) of the EIA Regulations dated 2010, under the NEMA, 1998 that the major potential impacts the activities, processes and actions may have on the surrounding environment, are identified.

Regulation 31 (of Regulation 543) of the EIA Regulations, 2010, under the NEMA, 1998, requires that an EIR includes an assessment of the status, extent, duration, probability, reversibility, replaceability of resources and mitigatory potential of the major potential environmental impacts of the proposed project be undertaken.

The identification of the major potential impacts has therefore only been included as part of the requirements for the compilation of the Scoping Report. The prediction of the nature of each impact, the evaluation of each impact by rating its significance and the management and mitigation measures adopted to address each impact, will be assessed during the EIR.

The activities associated with the proposed project are described in full in Part 2 and the anticipated impacts of the proposed project are described in Part 7.

The major impacts that are expected to occur as a result of the anticipated activities as part of the proposed project within the existing mine boundary area, may combine with impacts resulting from surrounding activities and land uses to form cumulative impacts, or to contribute to cumulative impacts that already exist. Regulation 28 (g) (of Regulation 543) of the EIA Regulations dated 2010, under the NEMA, 1998 requires that cumulative impacts are also considered.

A number of potentially significant impacts have been identified during the scoping process. Potential significant impacts that have been identified during the scoping process are:

- Pollution of soil, surface- and groundwater due to the waste rock dump and heap leach activities.
- The removal of protected camel thorn trees in a Critical Biodiversity Area.
- The cumulative impact of increased water use in the water scarce area.

Additional potentially significant impacts may be highlighted at a later stage. The extent of the identified potentially significant impacts will be quantified, and will be reported on as part of the EIR.

Knowledge gaps

The following knowledge gaps and uncertainties have been identified during the scoping process of the proposed optimisation project and require further investigations that will be carried out comprehensively as part of the EIA process for the proposed project:

• All relevant specialist studies need to be conducted for the area associated with the proposed new discard facility. The studies identified during the Scoping Phase include a

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Geohydrological assessment, Heritage Assessment, Social Impact Study, Soil Survey, Biodiversity Assessment and Noise Survey.

- While impacts have been identified as part of the scoping process, it is required as part of the EIA Phase to fully quantify impacts to all aspects of the environment.
- High-level designs are being developed for the proposed new facility and the associated infrastructure; these designs will be presented as part of the final EIR.

Content of the scoping report

This Scoping Report (compiled in terms of the NEMA, 1998) is divided into the following parts:

- Part 1: Introduction and description of the project.
- Part 2: Description of the existing environment.
- Part 3: Applicable legislation and guidelines.
- Part 4: Public Participation Process.
- Part 5: Need and desirability for the project.
- Part 6: Description of alternatives.
- Part 7: Identification of anticipated Environmental Impacts.
- Part 8: Plan of study for EIA.
- Part 9: Discussion and Conclusion.

1. INTRODUCTION

This draft Scoping Report forms part of an application for environmental authorisation for the optimisation project at Harmony Kalgold Mine. Application is also being made for a Water Use Licence and, should it be required by DEDECT, an Atmospheric Emission License for the facility. The application process is undertaken on behalf of the applicant, Harmony Mining Company Ltd, by Shangoni Management Services (Pty) Ltd. Shangoni was appointed as independent environmental practitioner, to assist the applicant in complying with the 2010 EIA Regulations in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), the National Water Act, 1998 (Act No. 36 of 1998), the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004), the Mineral and Petroleum Resources Development Act, 2002 (Act no. 28 of 2002) and the National Environmental Management: Waste Act, 2008 (Act 59 of 2008).

An application to undertake an Environmental Impact Assessment (Scoping and Environmental Impact Reporting) process was submitted to the identified competent authority, the North West Department of Economic Development, Environment, Conservation and Tourism. The Department subsequently registered the project and the formal Scoping and Environmental Impact Reporting (S&EIR) process was thereby initiated. All the findings from the draft Scoping process are included in this report.

1.1 Process to be followed

1.1.1 Objectives of the Scoping process and the Scoping Report

Scoping is the procedure that is undertaken during the initial stages of the Planning Phase of a project, and is used to determine the extent of, and approach to an EIA (i.e. terms of reference). This process is required for the proposed project in terms of the NEMA, 1998 and the EIA Regulations, 2010 there under.

The objectives of the Scoping Process are to:

- Provide an opportunity for the Applicant, relevant Authorities and Interested and Affected Parties (I&APs) to exchange information and express their views and concerns regarding the proposed project before the EIA is undertaken.
- Focus the study on relevant anticipated impacts, issues and concerns, as well as reasonable alternatives, to ensure that the resulting EIA is useful to the Authorities for decision-making, and addresses the impacts, issues and concerns as identified.
- Facilitate an efficient assessment process that saves time, resources and costs.

The objectives of this Scoping Report are to provide:

• An overview of the proposed project.

- An overview of the environmental features of the proposed site and immediate surrounding area.
- An indication of the I&AP's identified to date.
- An indication of issues of concern/comments received from I&AP's to date.
- An indication of potential environmental impacts that could take place as a result of the proposed project.
- Report on the Scoping Process.
- Assess the adequacy and appropriateness of the scoping procedure followed and the Scoping Report submitted.
- Ensure that the Scoping Report reflects the impacts and provides appropriate alternatives.
- Ensure that the Scoping Report is adequate and appropriate, and contains relevant information that will determine the route indication and set appropriate boundaries for the EIA.

1.1.2 Methodology applied to conducting the scoping process

The Scoping Process for the project will be carried out in terms of the NEMA, 1998. The Scoping Process therefore consists of the following:

- Landowners within the mine boundary area must be contacted and informed of the project (refer to **Part 4**).
- An Application for Environmental Authorisation Form must be compiled and submitted to the DEDECT (refer to **Appendix B1**).
- A Scoping Report describing all project activities as well as the listed activities (in terms of the NEMA, 1998) must be compiled in accordance with the requirements of the NEMA, 1998.
- The proposed project must be advertised in a local newspaper informing all potential I&APs (refer to **Appendix D**).
- This Scoping Report must be made available to the public for comment for a period of 40 days.
- All comments received from the public during the public consultation period must be noted and recorded as part of the Scoping Report (refer to **Appendix D** and **Part 4**).
- The Scoping Report must be finalised taking all public comments into consideration.
- The Scoping Report must be submitted to the DEDECT and the I&APs for review.
- Provided that the Scoping Report is approved by the DEDECT, the EIA process can be carried out.

1.1.3 The Scoping Report in terms of the requirements of the NEMA, 1998

Regulation 28(1) of the EIA Regulations, 2010 under the NEMA, 1998, lists aspects that must be included in Scoping Reports. Table 1 below indicates where the information has been provided as part of this Scoping Report:

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Regulation No:		Description	Scoping Report Part
		Details of the Environmental Assessment Practitioner (EAP).	Part 1 &
R543 Regulation 28(1)(a) (i) (ii)		Details of the EAP who prepared the report.	Appendix C
		Details of the expertise of the EAP to carry out scoping procedures.	
	(b)	A description of the proposed activity.	Part 1
R543 Regulation 28(1)(b)	(c)	Any feasible and reasonable alternatives that have been identified.	Part 6
R543 Regulation 28(1)(c)	1	A description of the property on which the activity is to be undertaken and the location of the activity on the property.	Part 1
R543 Regulation 28(1)(d)		A description of the environment that may be affected by the activity and the manner in which the physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity.	Part 2
R543 Regulation 28(1)(f)		An indication of all legislation and guidelines that have been considered in the preparation of the scoping report.	Part 3
R543 Regulation 28(1)(g)		A description of environmental issues and potential impacts, including cumulative impacts that have been identified.	Part 7
R543 Regulation 28(1)(h)	(i)	Details of the public participation process conducted in terms of Regulation 27(a). Steps taken to notify potentially interested and affected parties of the application. Proof that notice boards, advertisements and notices	Part 4 & Appendix D
	(ii)	notifying potentially interested and affected parties of the application have been displayed, placed or given.	
R543 Regulation 28(1)(h)	(iii)	A list of all persons or organisations that were identified and registered in terms of Regulation 55 as interested and affected parties in relation to the application.	
	(iv)	A summary of the issues raised by interested and affected parties, the date of receipt of, and the response of the EAP to those issues.	
R543 Regulation 28(1)(i)	1	A description of the identified potential alternatives to	Part 6

Table 1: The Scoping Report in terms of the EIA Regulations, 2010, under the NEMA, 1998

Regulation No:		Description	Scoping Report Part
		the proposed activity, including advantages and disadvantages that the proposed activity or alternatives may have on the environment and communities that may be affected by the activity.	
R543 Regulation 28(1)(j)		A description of the need and desirability of the proposed activity.	Part 5
R543 Regulation 28(1)(k)		Copies of any representations and comments received in connection with the application or the scoping report from interested and affected parties.	Part 4 & Appendix D
R543 Regulation 28(1)(I)		Copies of any minutes of any meetings held by the EAP with interested and affected parties and other role players that record the views of the participants.	Part 4 & Appendix D
R543 Regulation 28(1)(m)		Any responses by the EAP to those representations and comments and views.	Part 4 & Appendix D
		A plan of study for Environmental Impact Assessment (EIA), which sets out the proposed approach to the EIA of the application.	
R543 Regulation 28(1)(n)	(i)	A description of tasks that will be undertaken as part of the EIA process including any specialist reports or specialised processes, and the manner in which such tasks will be undertaken.	Part 8
K343 Kegulalion 20(1)(II)	(ii)	An indication of the stages at which the competent authority will be consulted.	Part 3, Part 4 & Part 8
	(iii)	A description of the proposed method of assessing the environmental issues and alternatives, including the option of not proceeding with the activity.	Part 6, 7 and Part 8
	(iv)	Particulars of the public participation process that will be conducted during the EIA process.	Part 4 and Part 8
R543 Regulation 28(1)(o)		Any specific information required by the competent authority.	Not Applicable *
R543 Regulation 28(1)(p)		Any other matters required in terms of Section 24(4) (a) and (b) of the Act.	Noted

* No specific requests have been received from the competent authorities to date.

The EIA process will be undertaken subsequent to the Scoping Process and will be conducted in accordance with Regulations 31 of the Environmental Impact Assessment Regulations, 2010 under the NEMA, 1998. The EIA document for the proposed project will include detailed information pertaining to anticipated or potential impacts that may be associated with the proposed project.



1.2 Applicant

Table 2: Applicant details

Name of Applicant	Harmony Mining Operations Ltd.
Name of Mine	Kalahari Goldridge Mining Company Ltd. (Kalgold Mine)
Contact Person	Irene Nadunga
Postal Address	PO Box 101, Mareetsane, 2715
Telephone No.	018 332 1116
Fax No.	086 763 7129
Farm name and portion on which the activities take place	The RE of the farm Spanover 552 IO.
Co-ordinates of operation	26° 08' 25.40"S; 25° 15' 09.57"E

1.3 Appointed Environmental Assessment Practitioner

Table 3: EAP information

Name of firm	Shangoni Management Services (Pty) Ltd.			
Postal address	PO Box 74726 Lynwood Ridge			
	Pretoria 0040			
Telephone No.	(012) 807 7036			
Fax	(012) 807 1014			
E-mail	emma@shangoni.co.za			
Team of Environmental Assessment Practitioners on project				
Name	Qualifications	Responsibility		
Mr. Jan Nel	M.Sc. Env. Man (UFS)	EIA project co-ordinator		
Ms. Emma Vorster	B.Sc. (Hons) Env. Man. (NWU)	Environmental assessment practitioner		
Mr. Brian Hayes	Professional Engineer	Quality assurance		
Detailed CV's for the project	t team are appended (Appendix C).	1		

Detailed CV's for the project team are appended (Appendix C).

1.4 Background of the mine

Kalgold Mine first started operation during the mid-1990's where it focussed on mining gold of the Dzone ore body. The economic ore body was mined out by a single open pit operation, along a strike length of 1300m and to a depth of approximately 290m below surface. The mining operation at Dzone ceased in March 2009. Mining at Kalgold Mine has continued despite the operation cessation at D-zone. The A-zone, Windmill zone and Watertank zone are relatively new opencast operations from which a remaining total resource estimated at 3.9 million ounces exists.

Kalgold Mine operation is located approximately 55km southwest of the town Mafikeng and 60km northeast of the town Stella in the Ratlou Local Municipality within the North West Province of South Africa. Nearby villages include Kraaipan (15km to the south), Setlagole (18km to the southwest) and Mareetsane (20km to the east). Figure 1 indicates the locality of the mine.

The ore reserves for Kalgold Mine are estimated at 23 986 940 tons. The average mined tons as of the 2012 Business plan are 999 456 tons per year. Planned LoM using the current mining method is 2026.

1.5 Description of the mine

Kalgold Mine is situated within the Raltou Local Municipalities' jurisdiction. This local municipality forms part of the Ngaka Modiri Molema District Municipality, located within the North West province.

Table 4: Administrative bound	aries of Kalgold mine
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Province	North West
District Municipality	Ngaka Modiri Molema District Municipality
Local Municipality	Ratlou Local Municipality
Ward	11
Department of Mineral Resources (DMR) Local Office	DMR - Klerksdorp
Department of Water Affairs (DWA) Local Office	Department of Water Affairs, Northern Cape
Department of Water Analis (DWA) Local onice	Regional Office- Kimberley
Department of Environmental affairs (DEA) Local Office	DEDECT – Mmabatho
Catchment Zone	Orange River catchment
Rainfall Zone	<500mm per annum
Water Management Area	Lower Vaal water management area

Table 5: Direction and distance to the nearest town

Closest town	Distance from site	Direction from site	
Kraaipan	15km	South	

Setlagole	18km	South-west
Mareetsane	20km	East
Mafikeng	55km	North-east

The table below provides the details of the owners of land and associated title deed descriptions. The information was obtained from the approved EMP of 2009.

Table 6: Surface rights holders

Farm Name	Title deed	Owner
Spanover 549 IO Portion 4	T1234/1996	Kalahari Goldridge Mining Company Ltd.
Spanover 549 IO Portion 5	T2226/1998	Kalahari Goldridge Mining Company Ltd.
Spanover 552 IO Portion 1	T1236/1996	Kalahari Goldridge Mining Company Ltd.
Ferndale 554 IO	T3024/1997	Kalahari Goldridge Mining Company Ltd.
Goldridge 632 IO	T1604/1998	Kalahari Goldridge Mining Company Ltd.
Ferndale 551 IO Portion 11	T1234/1996	Kalahari Goldridge Mining Company Ltd.
Ferndale 564 IO	T4009/1998	Kalahari Goldridge Mining Company Ltd.
Koedoerand 569 Remaining extent	T1998/2000	Kalahari Goldridge Mining Company Ltd.

1.5.1 Current mining activities

Kalahari Goldridge Mining Company Limited applied for a Mineral Rights Conversion i.e. the conversion of an Old Order Mining Right in terms of the Minerals and Petroleum Resources Development Act, 2002. The conversion of the Mining Right was authorised by the Department of Minerals and Energy (North West Province) on the 28th of August 2008. The mine currently operates under an approved EMP; dated 2009, reference number NW30/5/1/2/3/2/1/77EM.

The mine surface infrastructure is indicated in figure 2 and Appendix A. Current mining activities are discussed below.

- Opencast mining pits Three pits are currently mined: the A-zone, Watertank and Windmill pit. Mining of the D-Zone pit ceased in 2009.
- Waste rock dumps The north and south waste rock dumps are located to the north-east of the D-Zone pit.
- Slimes dam with return water and storm water dam Slimes generated in the processing plant are pumped to the slimes dams for disposal. Proposed operations will dispose of slimes at the existing slimes dam. These slimes comprise the barren ore pulp that remains after gold extraction. The outer walls of the slimes dams are constructed by raising the outer edges

mechanically. The slimes are pumped hydraulically to the disposal site in slurry from which the residue particles settle out onto the dam floor. Penstocks are used to collect and decant the clear water from the slimes dams into solution trenches that flow into a return water dam. This water is returned to the plant from where it is re-cycled as process water.

Heap leach dumps – Heap leaching is an industrial mining process to extract metals and other compounds form ore. Ore from the open pit is trucked to the run of mine (ROM) stockpile area. From here it is transferred via conveyor through pre-primary, primary, secondary, tertiary and quaternary crushing circuits, which reduce the ore size from 1000mm to 6mm. This product is stockpiled before lime is added and the material is transported and stacked on the heap leach pads. The cyanide solutions are pumped onto the heaps via a network of drip pipes. These solutions percolate through the ore particles within the heaps. Exposed grains of gold are dissolved and carried in solution via a system of drainage channels at the base of the heap to the pregnant pond. The pregnant pond overflows to an emergency pond in the event of excess solution volumes flowing from the heaps e.g. after a high rainfall event. The pregnant liquor is then pumped through carbon solution columns in which the gold is loaded by absorption onto carbon granules. After gold extraction, the cyanide solutions are pumped to the barren pond, where the cyanide is replenished and the solutions prepared for the next leaching cycle. The loaded carbon is diluted and gold recovered by electro-winning and smelting.

The heap leach facility is currently not operational, but reworking of the heap leach material is under way.

- Carbon-in-Leach (CIL) treatment plants The CIL circuit came on stream during March 1998 and shares a batch ore crushing facility with the heap leach operation. This process is used to treat higher-grade oxide and sulphide ores. Ore is taken to the tertiary crusher stage after which 12mm crush will be transferred to the mills where it is reduced to 80% minus 75µm. This pulp is then passed via a gravity concentrator in which the coarse gold is removed for smelting. The gravity tails are transferred to the CIL tanks where cyanide and carbon are added. A series of 6 tanks is in use, the first 2 for gold dissolution only and the following 4 for carbon-in-leach extraction. Loaded carbon from the CIL tanks is transferred to elution columns for gold extraction and electro-winning. Barren ore pulps from the CIL tanks are pumped to the slimes dam for disposal.
- Pollution control dams The slimes from the CIL plant is pumped to the slimes dam from where
 water not lost through evaporation and seepage loss is returned to the process water ponds.
 Berms and a fin drain were constructed around the slimes dam to minimize pollution of the
 groundwater component in the vicinity of the slimes dam.

- Storm water control measures There is a storm water control system between the plant and the Morokwa watercourse.
- A septic tank is used at the plant. Three French drains, located at the main office, training centre and contractors camp, are utilised for domestic waste water treatment
- Workshops, offices and other buildings There are workshops at the mining contractors base to service the mine machinery and a small workshop at the plant for general repairs and maintenance. Administrative personnel and facilities such as a guesthouse and coffee shop are located at the mine office. The assay laboratory is situated in the plant area.
- Explosive magazine The explosive magazine is located between the north waste rock dump and tailings dam.
- Mine airstrip The airstrip is located to the south of the main offices.
- Roads The N18 national road between Mafikeng and Stella was diverted around the D-zone ore body before open pit mining commenced. The road to the villages of Kraaipan and Khunwana runs along the south-western boundary of the site and a secondary dirt road, that provides access to farms to the north, runs through the central part of the site.
- Railways The nearest railway siding is located at Kraaipan, 15km south of the mine.
- Powerlines There is a network of 22kV Eskom powerlines to the farms that supplies the mine with electricity. The processing plant draws power form a sub-station on the 132kV powerline that is located at the southern end of the Kalgold property.

1.5.2 Land tenure and use of immediately adjacent land

The majority of the area within the Mining Right boundary as well as Spanover 552 IO was previously used for agricultural purposes, including beef production, maize, sunflower and groundnut crops. Kalgold lodged a rezoning application to change the land use on Spanover 552 IO from agricultural to mining. A Record of Decision was received on the 21st of August 2013 from Ratlou Local Municipality granting the rezoning of Spanover farm from agricultural land to mining area. Currently the area surrounding Kalgold is being used for low intensity grazing.

The surface owners of all farm portions immediately adjacent to Kalgold Mine are listed in table 7.

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Table 7: Adjacent surface rights owners to Kalgold mine

Farm Name	Owners' Details
Ferndale	CP Meyer
Avontuur	CP Meyer
Ferndale	N Meyer
Lenton	G Bothma
Shaftsbury	F Wessels
Koedoesrand	W de Chafarres Vrugt
Nottingham	TN Meyer

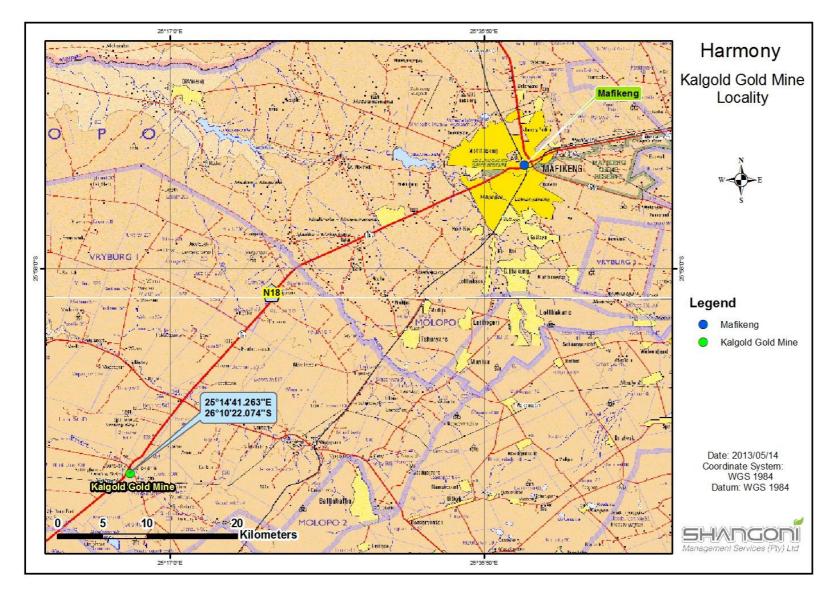


Figure 1: Locality of Kalgold mine

1.6 Description of the proposed activity

The optimisation project entails the construction of a new waste rock dump, heap leach, low-grade ore and topsoil stockpiles, as well as associated infrastructure such as:

- offices,
- workshops,
- access and haul roads,
- diesel and chemical storage facilities,
- crushing and screening plant,
- clean water tanks,
- dirty water system, including pollution control dams,
- storm water management system,
- water pipeline, and
- an explosives storage area.

An Integrated Water Use License application will be submitted to the Department of Water Affairs. The North West DEDECT will advise on the application for an Atmospheric Emissions Licence after the Environmental Authorisation process.

The following listed activities in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) are being applied for:

Number and date of the relevant notice	Activity No	Description
GN. No. R 544 Listing Notice 1 18 June 2010	9 (i) and (ii)	The construction of facilities or infrastructure exceeding 1000 metres in length for the bulk transportation of water, sewage or storm water - (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more, excluding where: a. such facilities or infrastructure are for bulk transportation of water, sewage or storm water or storm water drainage inside a road reserve; or b. where such construction will occur within urban areas but further than 32 metres from a watercourse, measured from the edge of the watercourse. Project description Sewage pipelines to the workshop/office complex will be constructed. Storm water containment infrastructure will be constructed to contain all storm water run-off.

Table 8: Listed activities in terms of NEMA, 1998



18 June 2010 storage occurs in containers with a combined capacity of 80 but not exceeding 500 cubic metres; Project description Chemicals such as Cyanide and Lime will be stored on site for use at the heap leach. Diesel for vehicles will be stored on site. Explosives will be stored on site. GN. No. R 544 22 IS June 2010 22 GN. No. R 544 22 IS June 2010 24 GN. No. R 544 22 IS June 2010 24 GN. No. R 544 25 IS June 2010 26 GN. No. R 544 26 Any process or activity identified in terms of section 53(1) of the National Environmental Authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity identified in terms of section 53(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 4 2004). Project description The constructed. GN. No. R 544 26 June 2010 26 Any process or activity identified in terms of section 52(1) (a) of the National Environmental Management: Biodiversity Act, 2004 (Mct N			Pipelines for water supply will be constructed.
Clean water systems, Item of facilities or infrastructure for the storage, or for the storage and handling, of a dangerous good, where such storage can be andling, of a dangerous good, where such storage can be andling, for a dangerous good, where such storage can be andling, for a dangerous good, where such storage occurs in containers with a combined capacity of 80 but not exceeding 500 cubic metres; Project description Chemicals such as Cyanide and Lime will be stored on site for use at the heap leach. Diesel for vehicles will be stored on site. Explosives will be stored on site. GN. No. R 544 22 Listing Notice 1 The quantities of the dangerous goods that will be stored on site. Is June 2010 22 GN. No. R 544 22 Listing Notice 1 13 in where no reserve exists where the road is wider than 8 metres, or (ii) or which an environmental authorisation was obtained for the roite determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Notice 546 of 2010. BN. No. R 544 26 Listing Notice 1 26 N. No. R 544 26 Dispect description Vanous haul roads of approximately 25 meters wide will be constructed. No. R 544 26 Dispect description The roget description Vanous haul roads of approximately 25 meters. Diveloc 42(1) (a) to the National Environme			Trenches and/or berms will be constructed as part of the dirty and
Listing Notice 1 18 June 2010 Listing Notice 2 18 June 2010 Listing Notice 2 19 Listing Notice 2 19 Listing Notice 1 18 June 2010 Listing Notice 2 19 Listing Notice 2 10 Listing Notice 2 10 Listing Notice 2 10 Listing Notice 2 118 June 2010 Listing Notice 2 118 June 2010 Listing Notice 2 15 Listing Notice 2 15 Listing Notice 2 15 Listing Notice 2 16 Listing Notice 2 17 Listing Notice 2 18 June 2010 Listing Notice 2 19 Listing Notice			clean water systems.
GN. No. R 544 22 The construction of a road, outside urban areas, (i) with a reserve wider than 13.5 meters, or (ii) where no reserve exists, where the existing reserves is wider than 3.5 meters; or (ii) where no reserve exists, where the existing reserves the existing reserves is wider than 3.5 meters; or (ii) where no reserve exists, where the reserves the existing reserve wider than 13.5 meters; or (iii) for which an environmental authoriset on 54.5 meters or or 2006 or activity 18 in Notice 545 of 2010. GN. No. R 544 26 Listing Notice 1 18 June 2010 GN. No. R 544 Listing Notice 1 18 June 2010 GN. No. R 544 Listing Notice 1 18 June 2010 GN. No. R 544 Listing Notice 1 18 June 2010 GN. No. R 544 Listing Notice 1 18 June 2010 GN. No. R 544 Listing Notice 1 18 June 2010 GN. No. R 544 Listing Notice 1 18 June 2010 GN. No. R 544 Listing Notice 1 18 June 2010 GN. No. R 544 Listing Notice 1 18 June 2010 GN. No. R 544	Listing Notice 1	13	the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 but not
GN. No. R 544 22 IB June 2010 22 GN. No. R 544 22 IB June 2010 22 GN. No. R 544 22 IB June 2010 22 GN. No. R 544 22 IB June 2010 22 GN. No. R 544 22 IB June 2010 23 GN. No. R 544 22 GN. No. R 544 26 GN. No. R 544 26 June 2010 26 GN. No. R 544 26 June 2010 26 GN. No. R 544 26 June 2010 26 Any process or activity identified in terms of section 53(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004). Project description The site also falls within Critical biodiversity Act, 2004 (Act No. 10 of 2004). The site also falls within Critical biodiversity Act, 2004 will be identified by a suitable qualified specialist. GN. No. R 544 47 (i) and (ii) IS June 2010 47 (i) and (ii) GN. No. R 544 47 (i) and (ii) IS June 2010 47 (i) and (ii			Chemicals such as Cyanide and Lime will be stored on site for use
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Bave not yet been finalised and will be verified during the EIA phase. GN. No. R 544 22 The construction of a road, outside urban areas, (i) with a reserve wider than 13,5 meters or, (ii) where no reserve exists where the road is wider than 8 metres, or activity 16 in Notice 545 of 2010. IB June 2010 20 Project description Various haul roads of approximately 25 meters wide will be constructed. Project description Various haul roads of approximately 25 meters wide will be constructed. Any process or activity identified in terms of section 53(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004). Project description Various haul roads of approximately 25 meters wide will be constructed. IB June 2010 Project description Various haul roads of approximately 25 meters wide vill be constructed. Row no 10 of 2004). Project description Various haul roads of approximately 25 meters wide will be constructed. No. 10 of 2004). Project description The proposed site and activities falls within an ecosystem that is threatened and in need of protection. In terms of Section 52(1) (a) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004). The site also falls within Critical biodiversity Act, 2004 will be identified by a suitable dualified by a scitable dualified by a scitable dualified by ascitable by as suitable by ascitable dualified sciealist.			Explosives will be stored on site.
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relocated. The activities and processes in Section 53(1) of the National Environmental Management: Biodiversity Act, 2004 will be identified by a suitable qualified specialist. GN. No. R 544 Listing Notice 1 18 June 2010 47 (i) and (ii) The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre - (i) where the existing reserve is wider than 13,5 meters; or (ii) where no reserve exists, where the existing road is wider than 8 metres – excluding widening or lengthening occurring inside urban areas. Project description Various roads will be lengthened and/or widened. GN. No. R 545 Listing Notice 2 18 June 2010			
Environmental Management: Biodiversity Act, 2004 will be identified by a suitable qualified specialist.GN. No. R 544 Listing Notice 1 18 June 201047 (i) and (ii)The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre - (i) where the existing reserve is wider than 13,5 meters; or (ii) where no reserve exists, where the existing road is wider than 8 metres - excluding widening or lengthening occurring inside urban areas.GN. No. R 545 Listing Notice 2 18 June 201055GN. No. R 545 Listing Notice 2 18 June 20105June 201057 He construction of facilities or infrastructure for any process or activity which requires a permit or license in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent and which is not identified in Notice No. 544 of 2010 or included in the list of waste management activities published in terms of section 19 of the National			
GN. No. R 544 Listing Notice 1 18 June 201047 (i) and (ii)The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre - (i) where the existing reserve is wider than 13,5 meters; or (ii) where no reserve exists, where the existing road is wider than 8 metres - excluding widening or lengthening occurring inside urban areas.GN. No. R 545 Listing Notice 2 18 June 20105The construction of facilities or infrastructure for any process or activity which requires a permit or license in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent and which is not identified in Notice No. 544 of 2010 or included in the list of waste management activities published in terms of section 19 of the National			Environmental Management: Biodiversity Act, 2004 will be
Project description Various roads will be lengthened and/or widened. GN. No. R 545 5 Listing Notice 2 18 June 2010 5 7	GN. No. R 544 Listing Notice 1 18 June 2010	47 (i) and (ii)	The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre - (i) where the existing reserve is wider than 13,5 meters; or (ii) where no reserve exists, where the existing road is wider than 8
Various roads will be lengthened and/or widened.GN. No. R 5455Listing Notice 2518 June 20105The construction of facilities or infrastructure for any process or activity which requires a permit or license in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent and which is not identified in Notice No. 544 of 2010 or included in the list of waste management activities published in terms of section 19 of the National			excluding widening or lengthening occurring inside urban areas.
Listing Notice 2 18 June 2010 A June 2010			Various roads will be lengthened and/or widened.
	GN. No. R 545 Listing Notice 2 18 June 2010	5	activity which requires a permit or license in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent and which is not identified in Notice No. 544 of 2010 or included in the list of waste management activities published in terms of section 19 of the National
	l		

		in which case that Act will apply.
		Project description The construction of the heap leach with pregnant pond, emergency pond and barren pond, waste rock dump as well as water storage and pollution control dams would require a licence under Section 21 of the National Water Act, 1998 (Act No. 36 of 1998).
		The heap leach will also require an atmospheric emissions licence in terms of Section 21 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004).
GN. No. R 545 Listing Notice 2 18 June 2010	26	Commencing of an activity, which requires an atmospheric emissions licence in terms of Section 21 of the National Environmental Management: Air Quality Act, 2004 (Act No.39 of 2004), except where Activity 28 in Notice No. 544 of 2010 applies.
		Project description The heap leach will also require an atmospheric emissions licence in terms of Section 21 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004).
GN. No. R 546 Listing Notice 3 18 June 2010	19(a)(i)(ee)	The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre. (a) In North West: i. Outside urban areas, in:
		(ee) Critical biodiversity areas (Terrestrial Type 1 and 2 and Aquatic Type 1) as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;
		Project description The lengthening of existing roads and haul roads in Critical Biodiversity Areas (Terrestrial Type 1).
GN. No. R 546 Listing Notice 3 18 June 2010	14(a)(i)	The clearance of an area of 5 hectares or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation, except where such removal of vegetation is required for: (1) purposes of agriculture or afforestation inside areas identified in spatial instruments adopted by the competent authority for agriculture or afforestation purposes;
		 (2) the undertaking of a process or activity included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the activity is regarded to be excluded from this list; (3) the undertaking of a linear activity falling below the thresholds in Notice R.544 of 2010.
		 (a) In Eastern Cape, Free State, KwaZulu-Natal, Gauteng, Limpopo, Mpumalanga, Northern Cape, Northwest and Western Cape: i. All areas outside urban areas.
		Project description The clearance of approximately 60ha of natural vegetation is required.
GN. No. R 546 Listing Notice 3 18 June 2010	12(a) (b)	 The clearance of an area of 300 square metres or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation. (a)Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; (b) Within critical biodiversity areas identified in bioregional plans;
		Project description The clearance of approximately 60ha of indigenous vegetation, in an ecosystem that is threatened, in need of protection and falls within Critical biodiversity areas, is required. (Terrestrial Type 1 and Aquatic Type 2)

GN. No. R 546 Listing Notice 3 18 June 2010	13(a) and (c)(i)(cc) and (ee)	The clearance of an area of 1 hectare or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation, except where such removal of vegetation is required for: (1) the undertaking of a process or activity included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), in which case the activity is regarded to be excluded from this list. (2) the undertaking of a linear activity falling below the thresholds mentioned in Listing Notice 1 in terms of GN No 544 of 2010. (a) Critical biodiversity areas and ecological support areas as identified in systematic biodiversity plans adopted by the competent authority. (c) In North West: i. Outside urban areas, in: (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (ee) Critical biodiversity areas (Type 1 only) and ecological support areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;
		Project description The clearance of approximately 60ha of indigenous vegetation, in an ecosystem that is threatened, in need of protection and falls within Critical biodiversity areas, is required. (Terrestrial Type 1 and Aquatic Type 2)
GN. No. R 546 Listing Notice 3 18 June 2010	10 (a) (i) and (ee)	The construction of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres. (a) In North West: i. Outside urban areas, in: (ee) Critical biodiversity areas (Terrestrial Type 1 and 2 and Aquatic Type 1) as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;
		Project description Chemicals such as Cyanide and Lime will be stored on site for use at the heap leach.
		Diesel for vehicles will be stored on site.
		Explosives will be stored on site.
		The site falls within Critical biodiversity areas (Terrestrial Type 1 and Aquatic Type 2).
		The quantities of the dangerous goods that will be stored on site have not yet been finalised and will be verified during the EIA phase.
GN. No. R 546 Listing Notice 3 18 June 2010	4 (a) (i) (ee)	The construction of a road wider than 4 metres with a reserve less than 13,5 metres. (a) In North West: i. Outside urban areas, in: (ee) Critical biodiversity areas (Terrestrial Type 1 and 2 and Aquatic Type 1) as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;
		Project description Various haul roads of approximately 20m wide will be constructed.
		The site falls within Critical biodiversity areas (Terrestrial Type 1 and Aquatic Type 2).



1.6.1 Atmospheric Emission License application

An Atmospheric Emission License application will be submitted to the North West Provincial authority, should it be required, to license the atmospheric emissions that are generated by the heap leach. The following activity is triggered by the proposed heap leach in terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004), List of activities which result in atmospheric emissions which have or may have a significant detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage (GN 248 of 31 March 2010):

13. Category 4: Metallurgical industry, Sub-category 4.17: Precious and base metal production and refining

Description:	The production or processing of precious and associated base metals.
Application:	All installations.

1.6.2 Integrated Water Use License application

An integrated water use license application will be submitted to the Department of Water Affairs for the following water use license activities:

- Section 21(b): Storage of water; and
- Section 21(g): Disposing of waste in a manner which may detrimentally impact on a water resource.

1.6.3 Licence application to remove Protected Trees

An application to remove the protected camel thorn trees will be submitted to the Department of Agriculture, Forestry and Fisheries in accordance with the National Forest Act, No. 84 of 1998.

1.7 Proposed locality

The proposed facility is situated on the remainder of the farm Spanover 552 IO, situated north of the A-Zone pit and east of the Watertank pit. A Google Earth image of the site is given in the figure 2. Refer to figure 8 and Appendix A for the design and the location of the site together with the area immediately surrounding the site. The existing mine is situated to the south and south-west of the facility. Photographs of the site are given below.

The centre co-ordinates of the site are as follows:

- 26° 08' 25.40" S
- 25° 15' 09.57" E

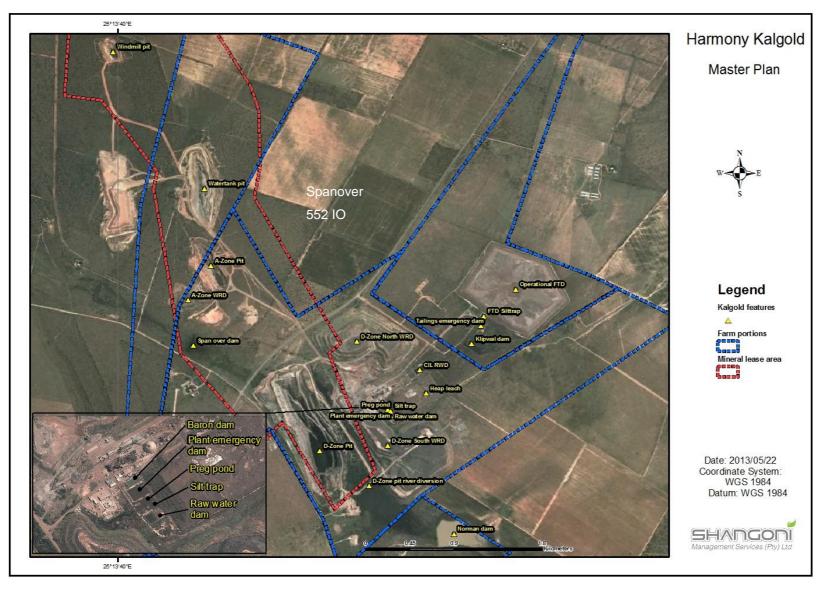


Figure 2: Google Earth image of the proposed site in relation to the existing mine

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Figure 3: A compounded image of the proposed site adjacent to the existing operations at Kalgold Mine



Figure 4: A photograph taken on Spanover 552 IO, facing north



Figure 5: Photographs taken at the southernmost point of the farm Spanover 552 IO



Figure 6: A picture taken at the northern portion of the impact area on Spanover 552 IO



Figure 7: The dwelling and cattle handling area on the farm Spanover 552 IO

1.8 Design

The initial design for the proposed waste rock dump, heap leach, low-grade ore stockpile and associated infrastructure is illustrated in figure 8. Final designs of the infrastructure will be incorporated into the EIA report.

1.8.1 Waste rock dump

The new waste rock dump is expected to carry 75Mt of waste. At capacity it will be 55m high with a slope of 21.5° and a base area of 98ha.

1.8.2 Heap leach

The new heap leach is planned to have a capacity of 24Mt. At capacity, it will be 30m high with a slope of 22° and a base area of 51ha.

1.8.3 Low-grade ore stockpile

The new low-grade stockpile will store 30Mt of ore. The stockpile will be 30m high with a 20° slope and cover a base area of 65.3ha.

1.8.4 Associated infrastructure

Associated infrastructure will cover an area of 83ha. This includes the construction of:

- The infrastructure area will cover an area of 83ha. The infrastructure area will include a workshop and office complex, crushing and screening plant, diesel tanks, power lines, sewage system, potable water system, topsoil stockpiles and high grade stockpiles.
- Infrastructure associated with the heap leach includes a pregnant pond, emergency pond and barren pond.
- Various haul roads of approximately 25 metres wide will be constructed. Some of the existing roads will be lengthened and widened.
- Chemicals such as cyanide and lime will be stored on site for use at the heap leach. Quantities for storage and use are not yet available.
- An explosives storage area will be constructed on site.
- Pollution control dams and clean water tanks will be constructed to contain all water as part of the clean and dirty water system. As yet, no design detail is available for the clean and affected water management. A comprehensive description will be provided in the EIA report.
- Storm water containment infrastructure will be constructed to contain all storm water run-off.
- Trenches and/ or berms will be constructed as part of the dirty and clean water systems.

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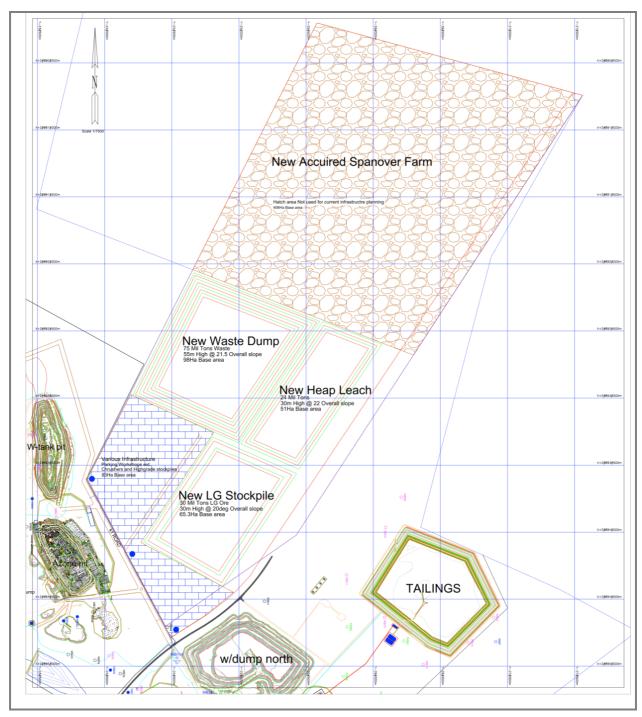


Figure 8: Approximate footprint area and location of the expansion to the proposed facility

2. NATURE AND EXTENT OF THE ENVIRONMENT AFFECTED BY ACTIVITY

This chapter provides an overview of the baseline environmental situation of Kalgold Mine in terms of the climate, geology, topography, soil, land capability and land use, fauna and flora, surface water, groundwater, air quality, noise and vibration, sites of historical and archaeological significance, sensitive landscapes, visual aspects and the socio-economic environment, which may directly or indirectly be affect the immediate and surrounding environment.

This section merely summarises the information obtained from existing documents with their supporting specialist studies. Information from various studies regarding the pre-mining environmental status as well as the changes to the environment due to existing mining activities have been conducted and pertinent information is included in this section.

The following terminology has been used throughout this document to describe the relevant surface areas that apply to this report.

Area	Definition
Mining area	Actual mine boundary area as defined in terms of the new order Mining Right
	under the MPRDA, 2002 for Kalgold Mine.
	The extent of the study area is determined by the area of influence of the
	different environmental components relevant to each aspect. Thus, the study
Study area	area referred to within the text applies to the specific component under
Study area	description. The extent of the study area is therefore not influenced by the
	mine boundary area, but rather by the specific activity relative to the
	environmental component.
	This refers to the area where the soil and vegetation is physically disturbed due
Area of surface disturbance	to activities, i.e. the waste rock dump, heap leach and low grade ore stockpile,
	the infrastructure associated, etc.
Dirty water management area	Surface area where polluted water is managed and will impact on receiving
Dirty water management area	environment if not contained.

Table 9: Terminology

2.1 Geology

2.1.1 Regional and General Geology

Kalgold is located within the geological terrane of the Archaean Kraaipan Greenstone Belt. This greenstone environment is exposed in discontinuous outcrops of steeply dipping rocks that define three narrow, sub-parallel belts that strike approximately north-south. The Goldridge deposits occur

within the central belt that comprises BIF, magnetite quartzite, chert, greywacke, shale and schist. Intrusive granites and gneisses surround the greenstones. These rocks have a complex history of deformation, which includes folding, faulting and shearing.

Younger cover rocks include isolated patches of lavas of the Ventersdorp Supergroup with much of the area blanketed by aeolian Kalahari sands. Sparse outcrops of quartz porphyry belonging to the Makwasie Formation occur in the region. Several large dykes with a predominant east-west trend have intruded the region.

2.1.2 General geology

The geology of the lease area and its immediate vicinity is characterized by ferruginous chemical and clastic sediments interbedded with metalavas and non-ferruginous metasedimentary rocks. These rocks strike approximately north-northwest. Outcrops in the area are sparse and generally restricted to the ferruginous rock types, which are more resistant to erosion. Magnetite quartzites are clastic sediments, which form a low ridge to the west of the mining area. Eastwards of this unit the iron-rich rocks generally comprise chemical sediments represented by magnetite-rich BIF, cherty BIF and banded chert. These units are interbedded with mafic schist, greywacke and sparse black shale.

2.1.3 Presence of dykes, sills and faults

On a regional scale, the Kraaipan greenstones are intruded by numerous approximately east-west trending mafic dykes. One such dyke cuts across the southern boundary of the mining lease area. Smaller diabase dykes commonly intrude the greenstone lithologies. The area is characterised by abundant faults with displacements from a few metres to hundreds of metres. Groundwater movement in the area takes place in a northerly direction mainly along strike on the contacts of the cherty banded iron units, and is affected by cross cutting dykes and faults.

2.2 Regional climate

The area's climate is characterised by summer thunderstorms and relatively low average rainfall of approximately 500mm per annum. The period between January and March usually receives the largest volumes of precipitation. Evaporation can reach up to five times higher than the mean annual precipitation (>1800mm).

Maximum temperatures usually peak between November and February, with an average maximum of 31°C recorded in January 2013 (climatedata.eu, 2013). Minimum temperatures are experienced between June and July, with an average minimum of 19°C recorded for July 2012.

Fall-out dust monitoring records, received from the mine's Environmental Officer, indicate that the strongest winds are generated from a northerly and north-easterly direction.

2.3 Topography

The mine is located in a region of low relief characterised by flat, undulating landforms. Certain of the iron-rich formations are hard and resistant to erosion and form low, narrow, discontinuous ridges, which strike north-south to north-northwest. The land slopes gently towards the Morokwa watercourse, which flows from southeast to northwest across the mine area.

There is a maximum elevation difference of approximately 25m with the ground sloping from an elevation of about 1245m above mean sea level in the southeast to 1220m in the north-western part.

2.4 Soils

The soils in the area are dominated by quaternary Kalahari sand depositions. Some alluvial formations occur along the riparian zones in the area.

The soils within the mining area were mapped on a scale of 1:5 000 using standard field observation procedures and hand auger drilling. The field work involved traversing of the area on a 300 by 300m grid in the proposed plant area and a 400 by 400m grid over the remainder of the property. A conventional bucket auger was used to obtain soil samples for logging and the compilation of profiles. A limited number of soil samples were collected for analyses to aid in the classification and to determine the nutrient status of the soils.

The identification and classification of soils was carried out in terms of the Soil Classification, A Taxonomic System for South Africa (MacVicar et al, 1991 edition). This is a relatively simple system that has two levels of classification, an upper, general level comprising soil forms and a lower, more specific level comprising soil families. Each of the soil forms in the classification is defined by a specific, unique vertical sequence of diagnostic horizons. All forms are further divided into two or more families, which have the same vertical sequence of diagnostic horizons, but are differentiated within the Form on the basis of certain physical and/or chemical properties.

2.5 Land capability of the proposed site

Land in the area of proposed development is suitable for livestock grazing and the dry land planting of summer rainfall crops. The removal of trees and scrub is required prior to crop planting. The generally low rainfall and unpredictable distribution pattern contribute towards land in this region being marginally economic for crop planting. Irrigation of crops is not a common practice in the region. Conditions favourable for adequate summer rainfall do not occur regularly and the region is susceptible to protracted droughts.

Within the mineral lease and freehold areas owned by the mine, the land capability may be classified according to the soil cover. The Namib soils, which represent 86% of the mining area, are suitable for

dry land crop and pasture planting, whereas the remainder of the area is suitable only for stock grazing. There are no wetlands or wilderness areas.

2.6 Land use at the proposed site

2.6.1 Pre-mining land use

The land within the mining area was previously used purely for agricultural purposes. Within the mineral lease and the freehold areas owned by the mine, approximately 43.4% (433ha) comprises bush and grasslands which was used for stock grazing, 21.4% (213ha) represents planted pastures and 35.2% (350ha) was used periodically for crop cultivation.

The land on Spanover 552 IO has mainly been used for beef production and the planting of maize crops.

2.6.2 Evidence of misuse

Erosion gulley's formed by runoff from the arable lands during storm events is a sign of misuse although this is not a major problem in the area. Sand storms during the dry windy months of August and September are generated from the vast areas of cultivated lands, which are denuded after crop harvesting when the lands are exposed to wind erosion. Some pioneer species and indicators of disturbance and grazing pressure are represented in the proposed project area.

2.6.3 Existing Structures

The existing structures on Spanover 552 IO comprise the normal fencing and water reticulation facilities required for stock farming. A homestead and associated farming infrastructure are present within the area. Telephone lines, secondary roads, some watering facilities for livestock and a power line also exist.

2.7 Vegetation

Kalgold falls within the Savanna biome, and is classified as Mafikeng Bushveld (Svk1) according to Mucina et al (2007). Vegetation within the mining area is no longer pristine, having been modified and transformed over the last century or more by pastoralism, cultivation and interference with surface water drainage patterns by impoundments. This has led to the extensive degradation of indigenous plant resources. The precise extent of these transformations and their impact on the structure and functioning of the prevailing ecosystem is difficult to determine.

2.7.1 Dominant Species

Vegetation within the mining area may be subdivided into those species that occur in sandy soil, rocky sub outcrops and within the clays of the Morokwa watercourse.

Dominant tree species in sandy soils are – Acacia erioloba, Ziziphus mucronata, Rhus lancea, and Acacia karroo.

Shrubs in sandy soils are – *Tarchonanthus camphoratus, Grewia flava, Acacia hebeclada* sub *hebeclada*, and *Dichrostachys cinera*.

Dominant tree species in rocky sub-outcrops are – Acacia karroo, Rhus lancea, Boscia albitrunca, and Mundulea sericea.

Dominant tree species in clays of the Morokwa water course are – *Acacia karroo, Rhus lancea*, and *Ziziphus mucronata*.

Shrubs identified are – Tarchonanthus camphoratus and Grewia flava.

Large areas of land are under annual indigenous grasses. The main indigenous grasses are – *Perotis patens, Phynchelytrum repens, Panicum natalense, Themeda triandra, Stipagrostis uniplumis, Digitaria eriantha* and *Cenchrus ciliaris.*

Stands of *Aloe davyana* are common in the area.

2.7.3 Endangered or Rare Species

According to the EMP dated July 2008, reference number HAR.K.07.287, there is no evidence of the presence of any endangered or rare plant species within the mining area.

2.8 Animal life

Wild animal life on the property is generally sparse, being limited to invertebrates, amphibians, reptiles, birds and small mammals that have adapted to the modified ecosystems. These animals occupy both the wooded and grassland areas. According to the EMP dated July 2008, reference number HAR.K.07.287, there is no evidence for any rare or endangered animal species within the mining area or on adjacent land.

2.9 Water

2.9.1 Water authority

The Northern Cape Department of Water Affairs – head office in Kimberley - is the responsible water authority. Kalgold Mine is situated within the Lower Vaal water management area.

2.9.2 Surface water

The dry drainage channel of the Morokwa watercourse traverses the current Kalgold Operation area. There are a number of small farm dams along the Morokwa, in which surplus runoff water is impounded during good rains. As a result of the non-perennial nature of the watercourse these dams are generally dry for most of the year.

No drainage lines are prevalent on Spanover 552 IO from desktop studies undertaken. Various site visits confirmed the absence of drainage lines.

2.9.3 Catchment areas

The regional catchment is drained by a number of small tributaries including the Mareetsane, Morokwa, Khunwana and Koedoesspruit drainages. These converge and flow into the Setlagole stream, which drains north-westwards into the Molopo River.

Drainages in the region are all normally dry and flow only after exceptional rainfall events. The boundaries of the quaternary catchment occupied by the mine are shown in figure 9. The only watercourse that would be followed by water emanating from the mine site is the Morokwa watercourse. Only under circumstances of exceptionally high rainfall could water from the mine area be expected to reach the Koedoesspruit drainage via the overflows of dams along the Morokwa.

2.9.4 Mean annual runoff (MAR)

The MAR from this catchment area has been estimated by Jones & Wagener in 2012. A WRSM90 synthetic stream flow generation model was used to obtain a simulated monthly flow record for the Morokwa watercourse at the location of the existing mine. The rainfall input to the model was an averaged historical record of several rain gauges in the region. The record spanned a 63-year period. These figures were obtained from archives and may differ from the rainfall data reported under section 2.2, which are based on the shorter sample period. The table below lists the computed mean annual runoff (MAR) of the drainage based on this 63 year simulated flow record.

Location	Computed MAR
Upstream of the mine property	2,83 x 10 ⁸ m ³

Table	10:	Computed	MAR	(Jones	&	Wagener.	2012)
IGNIO		oompatoa		001100	~	magonor,	2012)

2.9.5 Groundwater

The following information is based on the report titled: "Harmony Gold Mining Ltd Kalgold Gold Mine Hydrogeological Study Final Report, dated July 2011 and prepared by Auctus PM & Consulting (Pty) Ltd. This study was conducted for the Kalgold mining area, excluding the proposed project area, Spanover 552 IO. A Geohydrological study will be conducted for Spanover 552 IO during the EIA phase.



2.9.4.1 Aquifer Type

The mining area is covered by quaternary Kalahari sand, typically consisting of sand and silt that forms an intergranular, unconfined aquifer in the upper 30m of the geological succession. The rate of recharge to the aquifer is normally below 1% of the MAP. In intergranular porous deposits, like the Kalahari sands, aquifer parameters are reasonably homogeneous. There is currently no aquifer parameter information available for this aquifer in the study area and literature-based values are therefore used to quantify this aquifer. It is unclear whether this aquifer is laterally extensive over the mining area, but the aquifer is probably recharged seasonally with rainwater and therefore could contribute to water make in the pits. If boreholes are used regionally to abstract groundwater from this aquifer, the expected yield 0.1 - 0.5 l/s, which is low.

Due to the occurrence of bedding planes, fractures and faults in the weathered meta-sediments of the Kraaipan Greenstone Belt, a deeper fractured rock aquifer is formed. The fractured rock aquifer will be recharged through rainwater infiltrating from the overlying intergranular aquifer or through direct recharge where the BIF outcrops. The depth to groundwater in this aquifer is on average 25m, based on measurements in the mine's monitoring boreholes perceived not to be affected by mining or groundwater abstraction. Aquifer test information suggests that the aquifer could yield 0.5 - 3l/s, which is higher than that recorded for the intergranular Kalahari sand aquifer.

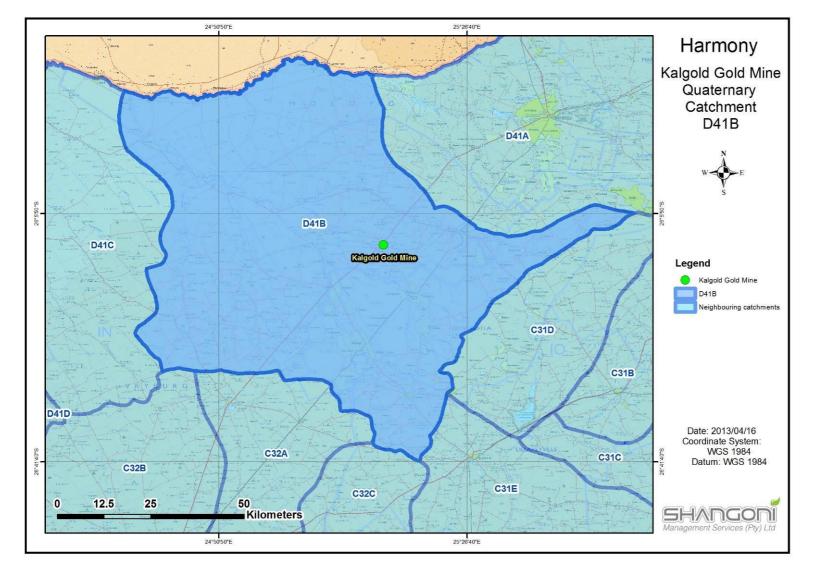


Figure 9: Quaternary catchment of the site

2.9.4.2 Groundwater Recharge

The primary groundwater recharge process is rainwater infiltration. Rainfall intensity, evaporation rate, vegetation cover, soil properties and gradient influence the groundwater recharge of the site in question. Groundwater in the mining area is mainly recharged through rainfall infiltration through the intergranular aquifer to the fractured aquifer. After reaching the water table, flow is predominantly down gradient along more permeable horizons.

2.9.5 Storage of water

Currently, there are no water storage facilities on the proposed optimisation project area. The mine utilises the following water storage facilities:

- Crafford dam situated within the Morokwa spruit and receives water run-off from the catchment area. Kalgold started using the dam in 2006 when they bought the property from a farmer
- Norman dam situated in the Morokwa spruit upstream of the D-Zone Pit river diversion. The Norman Dam collects clean storm water run-off from the area and has a capacity of 204 000m³ (Jones & Wagener, 2012).
- Spanover dam an old farm dam situated close to the mine offices, not on the proposed project area. The Spanover dam collects clean storm water run-off from the area and has a storage capacity of 303 000m³ (Jones & Wagener, 2012).
- Klipwal dam a storm water attenuation dam to divert/contain storm water run-off below the fine tailings dam. The Klipwal Dam has a storage capacity of 36 980 m³ (Jones & Wagener, 2012).

2.10 Sensitive Landscapes

The Biodiversity Act (Act 10 of 2004) provides for listing of threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), vulnerable (VU) or protected. The purpose of listing threatened ecosystems is primarily to reduce the rate of ecosystem and species extinction. This includes preventing further degradation and loss of structure, function and composition of threatened ecosystems. The purpose of listing protected ecosystems is primarily to preserve witness sites of exceptionally high conservation value.

The proposed site and activities falls within an ecosystem that is vulnerable and in need of protection in terms of Section 52(1)(a) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004). It also falls within critical biodiversity areas (CBA's) – Terrestrial type 1 and Aquatic type 2 – as identified in the North West Province Biodiversity Conservation Assessment (Desmet, Schaller & Skowno; 2009). See figures 10, 11 and 12 below.

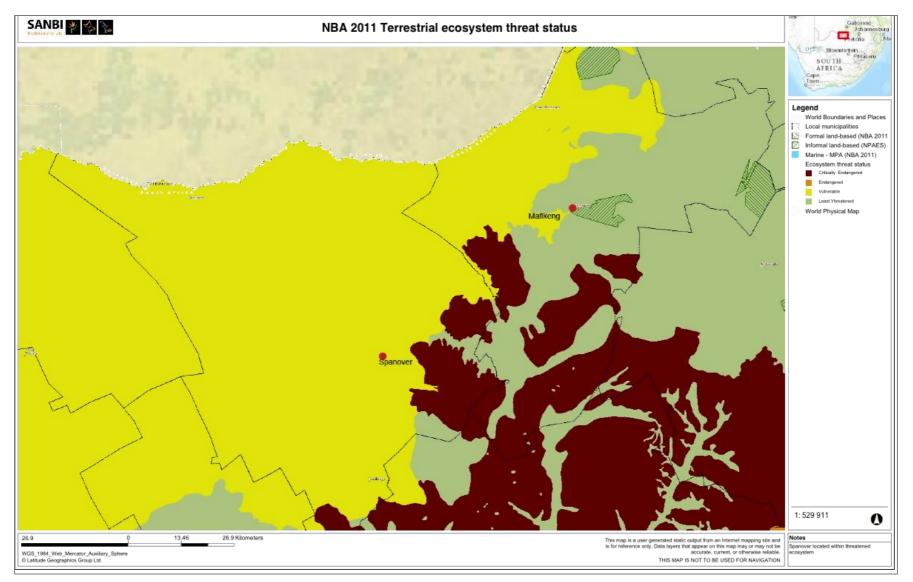


Figure 10: SANBI Map op threatened ecosystems

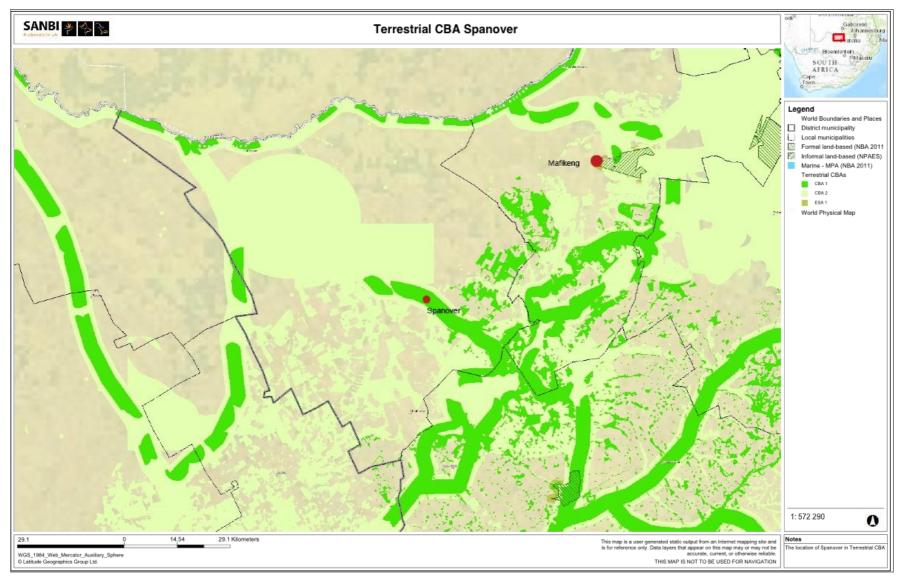


Figure 11: Terrestrial CBA's in the region (SANBI)

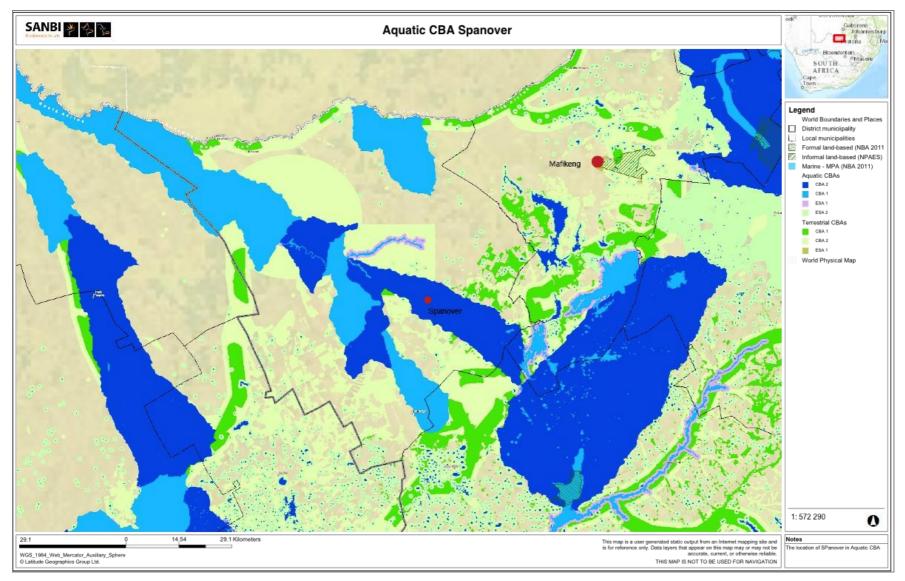


Figure 12: Aquatic CBA's in the region (SANBI)

2.11 Sites of archaeological and cultural interest

A heritage assessment of the remainder of the farm Spanover 552 IO was conducted on the 15th and 16th of July 2013 by Sidney Miller of African Heritage Consultants CC (appendix E). It was established that there is a disused residential building dating from the 1960's on the farm Spanover 552 IQ as well as three small burial sites of presumably labourers associated with the farm. The existence of these burial sites was established through communication with the caretaker of the present herd of cattle that operates from the disused residential building. The caretaker was able to identify one burial site that contains five graves. The caretaker is aware of two additional gravesites but could not identify the location of these sites.

Due to the fact that both the disused dwelling residential building as well as the three burial sites are located far to the north from the proposed footprint of the new waste rock dump, heap leach and low-grade ore stockpiles, it is safe to presume that for the foreseeable future that they will remain outside of the proposed new operations' impact area. The existence of these burial sites will be entered into the environmental management plan of the mine and will become part of the audit system for the mine. Figure 13 displays the location of the dwelling and graves on the proposed project area. It should be noted that the 1950's farmyard ruin, the 1960's homestead and the 19 unmarked graves that are also indicated on the figure are situated within the existing mining area and not on the proposed project area.



Figure 13: A Google Earth image indicating the location of heritage sites on Spanover 552 IO



Figure 14: One of the identified gravesites on Spanover 552 IO

The recommendation regarding the existing heritage remains on Spanover 552 IO is that as it is located well outside the footprint of the proposed new mining operations, the age of the dwelling and cattle post falls outside the sixty year rule and does not need mitigation in case of possible demolition.

2.12 Visual aspects

The proposed optimisation project site, mine site and processing plant are visible from the main road, the N18, between Mafikeng and Vryburg that crosses the project area.

2.13 Air Quality

2.13.1 Dust

Kalgold is located in a remote rural region on the edge of the Kalahari Desert. Atmospheric dust pollution is prevalent, particularly during the dry, windy months when the vast areas of denuded croplands are exposed to wind erosion. Dust storms are common during the period August to October. These storms may be of such magnitude that visibility is restricted to a few tens of metres. Small dunes commonly occur along boundary and camp fences where the vegetation adjacent to the denuded farmlands has caused the deposition of windblown sand.

There are 8 fall-out dust monitoring points at Kalgold mine, indicated in figure 15. It should be noted that dust at Spanover 552 IO is not being monitored. The graph in figure 16 depicts the dust fall-out data between February 2009 and December 2011. All data was received from the Environmental Officer at the mine.

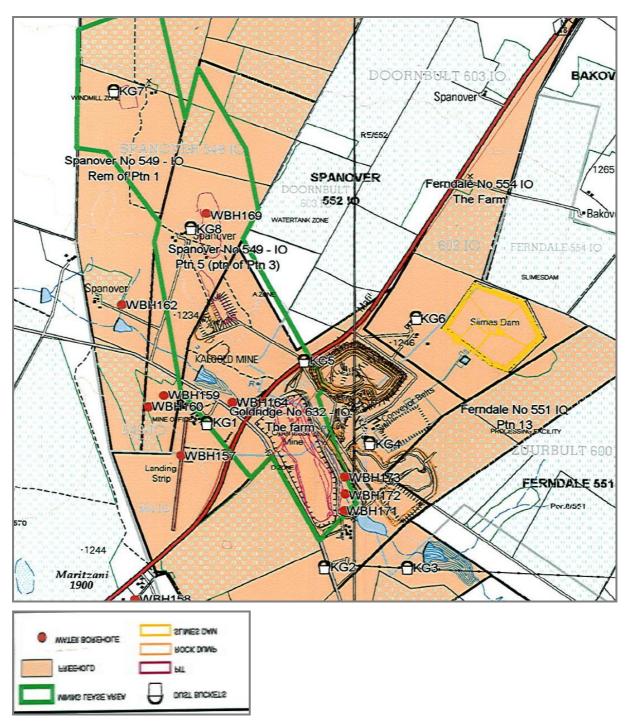


Figure 15: Fall-out dust monitoring points

The graph in figure 16 indicates high fall-out dust concentrations during the month of August and September for two consecutive years at the monitoring point named KG8. This monitoring point is situated east of the Watertank pit. These results are consistent with the occurrence of dust storms from August to October.

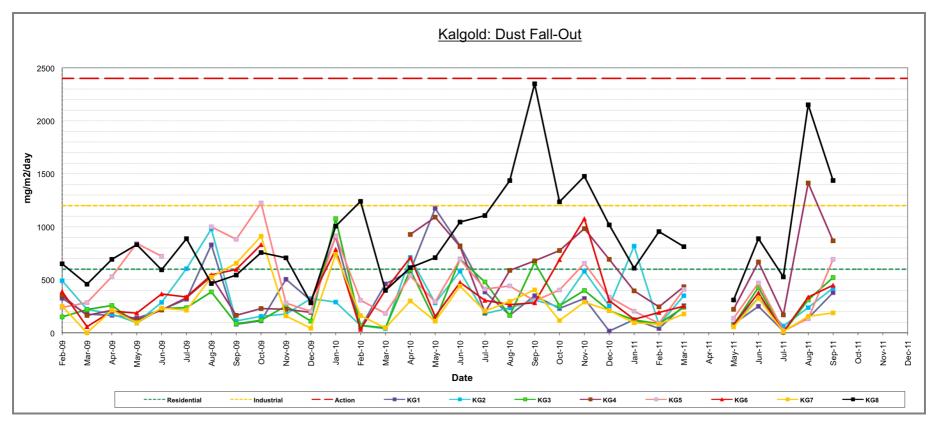


Figure 16: Kalgold dust fall-out graph

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2.13.2 Noise pollution

Noise within the Kalgold mining area is mainly related to the R49 road link between Mafikeng and Vryburg that traverses the mine site. This is a busy transport route and noise emanating from heavy vehicular traffic is a source of noise pollution. Blasting during mining operations is also a current source of noise pollution according to the EMP dated July 2008.

2.14 Socio-economic aspects

The site is located within the Ratlou Local Municipality. A Social Impact Assessment is currently being conducted for the mine by Equispectives, including the proposed Spanover activities.

2.14.1 Demography

According to 2011 census, 107 339 people formed part of the 26 889 households in the Ratlou Local Municipality. The average household size is 3,9 people per household. There are 91,6 men for every 100 women in the municipality and the table below shows the age structure of the municipality.

Table 11: Ratlou local municipality age structure - Census 2011 (Statistics South Africa, 2011).

Age Group	Percentage (%)
Under 15 years of age	38,7%
15 to 64 years of age	53,9%
Over 65 years of age	7,4%
Total population	100

2.14.2 Major economic activities

Ratlou local municipality is predominately rural in character. According to the 2012-2017 Integrated Development Plan (IDP), agriculture, community/personal and trade/retail are the sectors that account for the highest employment numbers in the municipality. The occupational structure of Ratlou local municipality is detailed in the table below.

Table 12: Occupationa	structure of	Patlou local	municipality	(2012-2017 IDD)
Table 12. Occupationa	i structure or	Ratiou local	municipanty	(2012 - 2017 1DF)

Occupational Groups	1996	2001	2007
	%	%	%
Clerks	4	6	6
Craft/Trade	15	8	4
Elementary Jobs	35	39	28
Legislators/Senior Officials	3	2	2

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Not Economically classified	3	4	4
Plant/Machine Operator	7	9	9
Professionals	14	4	4
Service Workers	9	6	2
Agricultural/Fishery	5	8	7
Technicians	4	10	15
Undetermined	1	4	19
Total	100	100	100

2.14.3 Unemployment and employment

According to the 2011 Census survey, the unemployment rate in the Ratlou Local Municipality is at 43,9% (Stats SA; 2012). Table 13 indicates the employment status of the economically active age group, 15-64, in the Ratlou local municipality.

Table 13: Employment rate for the economically active group of Ratlou Local Municipality

Employment status	Percentage
Employed	15,2%
Unemployed	11,9%
Discouraged work seeker	11,4%
Not economically active	61,5%

3. LEGISLATION AND GUIDELINES APPLICABLE

3.1 Laws of general application

- Constitution of the RSA, 1996 (Act No. 108 of 1996)
- National Environmental Management Act, 1998 (Act No. 107 of 1998)
- Environment Conservation Act, 1989 (Act No. 73 of 1989 as amended)
- Mineral and Petroleum Resources Development Act (Act no. 28 of 2002)
- Promotion of Access to Information Act, 2000 (Act No. 2 of 2000 as amended)

3.2 Atmospheric emissions

- National Environmental Management: Air Quality Act (Act No. 39 of 2004)
- Environment Conservation Act, 1989 (Act No. 73 of 1989) Noise Control Regulations in terms of Section 25 of the Environment Conservation Act, 1989

3.3 Water Management

• National Water Act, 1998 (Act No. 36 of 1998)

3.4 Waste management

• National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)

3.5 Planning of new activities

• National Environmental Management Act, 1998 (Act No. 107 of 1998)

3.6 Biodiversity

- National Environmental Management Biodiversity Act, 2004 (Act No 10 of 2004)
- National Forest Act (Act no. 84 of 1998)
- Conservation of Agricultural Resources Act, 1983 (Act No 43 of 1983)
- National Veld and Forest Fire Act, 1998 (Act No 101 of 1998)
- Agricultural Pest Act, 1983 (Act No 36 of 1983 as amended) GN R276 of 5 March 2004
- National Fencing Act, 1963 (Act No 31 of 1963 as amended)
- National Forest and Fire Laws Amendment Act (Act No 12 of 2001)

3.7 Land and Soil Management

- National Environmental Management Act, 1998 (Act No. 107 of 1998)
- Environmental Conservation Act, 1989 (Act No. 73 of 1989)

3.8 Heritage resources

• National Heritage Resources Act No 25 of 1999 (Act No. 25 of 1999, as amended)

3.9 Protected areas

• National Environmental Management: Protected Areas Act, 2003 (Act No 57 of 2003 as amended)

During the course of the development, the developer and contractors must comply with all other relevant legislation (including the bylaws of the Ratlou Local Municipality).



4. PUBLIC PARTICIPATION PROCESS

4.1 Introduction

A Public Participation Process (PPP) is a requirement in terms of the 2010 EIA Regulations of the National Environmental Management Act, 1998 (Act No. 107 of 1998), the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004), and the National Water Act, 1998 (Act No. 36 of 1998). It forms an integral part of any EIA process.

This section provides information pertaining to the PPP that was conducted by Shangoni Management Services during this particular assessment.

The purpose of this process is to gather information from the community and relevant stakeholders that could ultimately affect the decision-making process concerning the planning, construction and operational phases of the proposed optimisation project. The community and public have been identified as I&APs and have been given the opportunity to participate in this process. Their comments, whether positive or negative, will influence the decision of the Authorities and the developer's final actions.

4.2 Objectives of the PPP

The PPP has the following objectives:

- To inform I&APs as well as all stakeholders of the proposed development;
- To provide an opportunity for I&APs and stakeholders to raise environmental issues or concerns and make suggestions;
- To promote transparency and an understanding of the project and its consequences; and
- To serve as a structure for liaison and communication with I&APs and stakeholders.

To summarise, the objective of the on-going PPP is to promote openness and transparency concerning the proposed optimisation project for the duration of the project. The process should by no means be regarded as a vehicle to temper opposition or objections. Any conclusions agreed upon must be socially, financially and technically acceptable and feasible in order to meet the requirements of the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998), the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004), the National Water Act, 1998 (Act No. 36 of 1998), the Mineral ad Petroleum Resources Development Act, 2002 (Act no. 28 of 2002) and the vision of Harmony Gold Mining Company Ltd.

4.3 The Guidelines Followed for the PPP

The PPP for this project was conducted by Shangoni Management Services and undertaken strictly according to the guidelines in terms of the National Environmental Management Act (NEMA), No. 107 of 1998, Chapter 6.

4.4 Public Participation Process

- 54. (1) This regulation only applies in instances where adherence to the provisions of this regulation is specifically required.
- (2) The person conducting a public participation process must take into account any guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of the application which is subjected to public participation by-
- (a) fixing a notice board at a place conspicuous to the public at the boundary or on the fence of -
 - (i) the site where the activity to which the application relates is or is to be undertaken; and
 - (ii) any alternative site mentioned in the application;
- (b) giving written notice to -
 - the owner or person in control of that land if the applicant is not the owner or person in control of the land;
 - the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
 - (v) the municipality which has jurisdiction in the area;
 - (vi) any organ of state having jurisdiction in respect of any aspect of the activity; and
 - (vii) any other party as required by the competent authority;
- (c) placing an advertisement in
 - (i) one local newspaper; or
 - (ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;
- (d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or local municipality in which it is or will be undertaken: Provided that this paragraph need not be

complied with if an advertisement has been placed in an official *Gazette* referred to in sub regulation (c)(ii); and

- using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desiring of but unable to participate in the process due to
 (i) illiteracy;
 - (ii) disability;
 - (iii) or any other disadvantage.

(3) A notice, notice board or advertisement referred to in sub regulation (2) must

- (a) give details of the application which is subjected to public participation; and
- (b) state-
 - that the application has been submitted to the competent authority in terms of these Regulations, as the case may be;
 - (ii) whether basic assessment or scoping procedures are being applied to the application, in the case of an application for environmental authorisation;
 - (iii) the nature and location of the activity to which the application relates;
 - (iv) where further information on the application or activity can be obtained; and
 - (vi) the manner in which and the person to whom representations in respect of the application may be made.

(4) A notice board referred to in sub regulation (2) must-

- (a) be of a size at least 60cm by 42cm; and
- (b) display the required information in lettering and in a format as may be determined by the competent authority.

(5) Where deviation from sub regulation (2) may be appropriate, the person conducting the public participation process may deviate from the requirements of that sub regulation to the extent and in the manner as may be agreed to by the competent authority.

(6) Where a basic assessment report, scoping report or environmental impact assessment report as contemplated in regulations 22, 28 and 31 respectively is amended because it has been rejected or because of a request for additional information by the competent authority, and such amended report contains new information, the amended basic assessment report, scoping report or environmental impact assessment report must be subjected to the processes contemplated in regulations 21, 27 and 31, as the case may be, on the understanding that the application form need not be resubmitted.

(7) When complying with this regulation, the person conducting, the public participation process must ensure that-

(a) information containing all relevant facts in respect of the application is made available to potential interested and affected parties; and

(b) participation by potential interested and affected parties is facilitated in such a manner that all potential interested and affected parties are provided with a reasonable opportunity to comment on the application.

(8)Unless justified by exceptional circumstances, as agreed to by the competent authority, the applicant and EAP managing the environmental assessment process must refrain from conducting any public participation process during the period of 15 December to 2 January.

Register of interested and affected parties

- 55.(1) An EAP managing an application must open and maintain a register which contains the names, contact details and addresses of -
- (a) all persons who, as a consequence of the public participation process conducted in respect of that application in terms of regulation 54, have submitted written comments or attended meetings with the applicant or EAP;
- (b) all persons who, after completion of the public participation process referred to in paragraph
 (a), have requested the applicant or the EAP managing the application, in writing, for their names to be placed on the register; and
- (c) all organs of state which have jurisdiction in respect of the *activity* to which the application relates.
- (2) An EAP managing an application must give access to the register to any person who submits a request for access to the register in writing.

Registered interested and affected parties entitled to comment on submissions

- 56.(1) A registered interested and affected party is entitled to comment, in writing, on all written submissions, including draft reports made to the competent authority by the applicant or the EAP managing an application, and to bring to the attention of the competent authority any issues which that party believes may be of significance to the consideration of the application, provided that-
- (a) comments are submitted within-
 - (i) the timeframes that have been approved or set by the competent authority; or
 - (ii) any extension of a timeframe agreed to by the applicant or EAP;
- (b) a copy of comments submitted directly to the competent authority is served on the EAP; and
- (c) the interested and affected party discloses any direct business, financial, personal or other interest which that party may have in the approval or refusal of the application.
- (2) Before the EAP managing an application for environmental authorisation submits a final report compiled in terms of these Regulations to the competent authority, the EAP must give registered interested and affected parties access to, and an opportunity to comment on the report in writing.
- (3) The report referred to in sub regulation (2) include-

- (a) basic assessment reports;
- (b basic assessment reports amended and resubmitted in terms of regulation 24 (4);
- (c) scoping reports;
- (d) scoping reports amended and resubmitted in terms of regulation 30(3);
- specialist reports and reports on specialised processes compiled in terms of regulation 32;
- (f) environmental impact assessment reports submitted in terms of regulation 31;
- (g) environmental impact assessment reports amended and resubmitted in terms of regulation 34(4); and
- (h) draft environmental management programmes compiled in terms of regulation 33.

(4) The draft versions of reports referred to in sub regulation (3) must be submitted to the competent authority prior to awarding registered interested and affected parties an opportunity to comment.

(5) Registered interested and affected parties must submit comments on draft reports contemplated in sub regulation (4) to the EAP, who should record it in accordance with regulations 21, 28 or 31.

(6) Registered interested and affected parties must submit comments on final reports contemplated in sub regulation (3) to the competent authority and provide a copy of such comments to the applicant or EAP.

(7) The competent authority must, in order to give effect to section 24O of the Act, on receipt of the draft reports contemplated in sub regulation (5), request any State department that administers a law relating to a matter affecting the environment to comment within 40 days.

(8) The timeframe of 40 days as contemplated in sub regulation (7) must be read as 60 days in the case of waste management activities as contemplated in the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), on which the Department of Water Affairs must concur and issue a record of decision in terms of section 49(2) of the National Environmental Management: Waste Management Act, 2008 (Act No. 59 of 2008).

(9)(a)When a State department is requested by the competent authority to comment, such State department must, within 40 days or in the case of Department of Water Affairs, 60 days for waste management activities, of being requested to comment by the competent authority, provide comments to the competent authority.

(b)If a State department fails to submit comments within 40, or 60 days for waste management activities, from the date on which the Minister, MEC, Minister of Mineral Resources or identified

competent authority requests such State department in writing to submit comment, it will be regarded that there are no comments.

Comments of interested and affected parties to be recorded in reports submitted to competent authority

- 57. (1) The EAP managing an application for environmental authorisation must ensure that the comments of interested and affected parties are recorded in reports and that such written comments, including records of meetings, are attached to the report, submitted to the competent authority in terms of these Regulations.
- (2) Where a person is desiring but unable to access written comments as contemplated in sub regulation (1) due to-
 - (i) a lack of skills to read or write;
 - (ii) disability; or
 - (iii) any other disadvantage,

reasonable alternative methods of recording comments must be provided for.

4.5 Public Participation Process Followed

The following PPP was conducted for the proposed optimisation project:

- Identification of key Interested and Affected Parties (all adjacent landowners);
- Identification of key stakeholders;
- Informing the key stakeholders of the process by means of correspondence;
- Placement of a press notice in the Mafikeng Mail and *Die Noordwester* newspapers, informing the public of the process;
- Placement of site notices at the site; and
- Correspondence with I&APs and stakeholders and the addressing of their comments.

4.5.1 Identification & Registration of I&APs

Through networking and advertising, I&APs were registered on a database. Shangoni ensured that individuals or organisations from an institutional as well as a geographical point of view were identified.

Geographically, Shangoni focused on nearby or adjacent landowners, communities and structures that represent them. Institutionally, the focus was on those organisations or individuals that may influence policies and decisions or make a contribution to the project. Not all of these organisations were necessarily in the direct project sphere of impact.

4.5.2 Notification of key stakeholders and I&APs

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Stakeholders are all the relevant authorities and land owners that may possibly be affected by this project. The following stakeholders and I&AP's were identified:

Name	Organisation/Farm	Postal Address	Contact details
Mr. Pieter Swart	Department of Mineral	Private Bag A1	(018) 487 9830
	Resources – North	Klerksdorp	Pieter.swart@dmr.gov.za
	West	2570	
Ms. Lerato Mokhoantle	Department of Water	Private Bag X6101	(053) 830 8877
	Affairs – Northern Cape	Kimberley	mokhoantlel@dwa.gov.za
		8300	
Mr. Nevhufumba	National Department of	Private Bag X05	(018) 381 8423
Lufuno	Agriculture	Mmabatho	nevhufumbal@nda.agric.za
		2735	
The Provincial Manager	SAHRA – North West	P.O. Box 3054	kmokgophe@nw.sahra.org.za
	Satellite Office	Mmabatho	
		2735	
The Municipal Manager	Mafikeng Local		municipalmanager@nmmdm.go
	Municipality		v.za
Robert Rakuba	Ratlou Local	Private Bag X209	glen@ratlou.gov.za
	Municipality	Madibogo	
		2772	
Wim de Chavonnes	Kodoesrand & Bakoven	P.O. Box 366	083 441 5828
Vrugt		Stella	wimdc@lantic net
		8650	
Mr. G.H. Phoi	Paramount Chief –		(018) 337 9065
	Banalong Tribe		083 233 4503
Mr. Jack Setlhako	Local Black	P.O. Box 2439	076 558 8296
	Entrepreneurs -	Florida Hills	koot@yebo.co.za
	Madibogo area	1716	
Louis Dreyer	Chairman – Agri		082 388 2781
	Mareetsane		bellevue@lantic.net

 Table 14: Stakeholders identified during the PPP

Shangoni sent registered letters to the Departments and Organs of State containing a letter of notification. The notification letters were also sent via email. Notification letters were hand delivered to the local Tribal Authority and the Mareetsane Farmers' Association. Figures 17-19 provide an example of the letters sent out to Departments, Organs of State and potential I&AP's. Figure 20

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provides proof that notification letters were sent to Departments and Organs of State. Proof that notification letters were delivered to the Tribal Authority is depicted in figure 21 and attached under Appendix D.

	SHANGONI Management Services (Pty) Ltd	Brangani Management Services Pry (J.3) Reg. 2002000000247 INT 489 016 1989 Tel + 27(0)12: 807 7036 Fast +27(0)12:807 1014	
		E-mail Info®changoni.co.za www.shangoni.co.za Block C8, Block®Nature 472 Botenhapper Greet. The Willows C081 PO Box 74730 Lymwood Ridge 0040	Implemented, which while LoM requirements.
	13 August 2013		Harmony: Kalgold Mine -
	Attention: Mr. Pieter Swart		dump, heap leach, low-gra
	Private Bag A1		
	Klerksdorp		 The proposed waste r
	2570		and the footprint area
			 The proposed Heap L
	NOTICE OF APPLICATION FOR ENVIRONM	MENTAL AUTHORISATION	 The low-grade stockp
-			area of 65.3ha.
	Mailas la basebu abus étai as assilasitas	for endersonial additional in forms of the FIS	 The Infrastructure are
		for environmental authorisation in terms of the EIA Chapter 5 of the National Environmental Management	workshop and office c
		red with the North West Department of Economic	system, potable water
		nd Tourism (NWDEDECT). The activity requires an	 Various roads of apprentice
		nmental Impact Assessment Process as required by	will be lengthened and
	Sections 26 to 35 of Government Notice R. 54		 Chemicals such as cya
		-	 Explosives will be store
	Ref. Number: NWP/EIA/15/2013		 Pollution control dams
			the clean and dirty wal
	Applicant: Harmony Kalgold Mining Operatio	ns	 Storm water containment
			 Trenches and/ or bem
		roject, consisting of the construction of a waste rock	 Explosives magazine.
	dump, heap leach, low-grade stockpile and va	arlous associated infrastructure.	Activities applied for:
	Project Location: The remaining extent of th	e farm Spanover 552 IO, Mareetsane, North West.	GN. No. R 544 9 (I) and (Listing Notice
	Project Description; Harmony Kalgold Minir	ng Operations is situated 60km southwest of Mafikeng	18 June 2010
	In the North West province, some 300km i	west of Johannesburg. The mine is situated on the	
	Kraalpan greenstone belt and was discovered	ed by Shell in the mid-1980s. Harmony acquired the	
		n faced with a number of processing related problems,	
	Including the following:		
	 Mechanical breakdowns in the mill section 	n;	
	 High maintenance costs; and 		
	 Water supply related problems. 		
	The mainstip of these problems are related	to processing plant being originally designed for 10	
		ver this limit. Some short-term interventions have been	
	years of operation, and being ourrently werron		
	Directors RB Hayes J Nel JA van Rooy CJ Potgleter HL de VIII	ers	
Figure	17: Example of the po	tification letters (pages 1-2)	
· ·guic		(puges 1-2)	

they will allow the plant to run for a few years, they do not address the

Optimisation Project includes the proposed construction of a waste rock de stockpile and various associated infrastructure.

- ock dump will have the capacity to store 24 million tons (Mt) of waste rock for the waste rock dump will be 98 hectares (ha) in size.
- each will have a capacity of 24 Mt and cover an area of 51ha.
- le will have the capacity to store 30 Mt of low-grade ore and cover an
- ea will cover an area of 83ha. The infrastructure area will include a omplex, crushing and screening plant, diesel tanks, power lines, sewage system and high-grade stockpiles.
- oximately 25 metres wide will be constructed. Some of the existing roads widened.
- anide and lime will be stored on site for use at the heap leach.
- ed at the explosive magazine on site.
- and clean water dams will be constructed to contain all water as part of ter system.
- ent infrastructure will be constructed to contain all storm water run-off.
- ns will be constructed as part of the dirty and clean water systems.

GN. No. R 544	9 (I) and (II)	The construction of facilities or infrastructure exceeding 1000 metres in
Listing Notice		length for the bulk transportation of water, sewage or storm water -
1		(I) with an Internal diameter of 0,36 metres or more; or
18 June 2010		(II) with a peak throughput of 120 litres per second or more,
		excluding where:
		 a. such facilities or infrastructure are for bulk transportation of water,
		sewage or storm water or storm water drainage inside a road reserve; or
		b. where such construction will occur within urban areas but further than
		32 metres from a watercourse, measured from the edge of the
		watercourse.
		Protect description
		Sewage pipelines to the workshop/office complex will be constructed.
		Storm water containment infrastructure will be constructed to contain all storm water run-off.
		storm water run-on.
		Pipelines for water supply will be constructed.
		Pipelines for water supply will be constructed.
		Trenches and/or berms will be constructed as part of the dirty and clean
		Trefferes and of bernis will be consudered as part of the any and creat

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		water systems.
GN. No. R 544 Listing Notice	13	The construction of facilities or infrastructure for the storage, or for the storage and handling, of a dangerous good, where such storage occurs i containers with a combined capacity of 80 but not exceeding 500 cubic
18 June 2010		metres;
		Protect description Chemicals such as Cyanide and Lime will be stored on site for use at the heap leach.
		neap leacn. Diesei for vehicles will be stored on site.
		Explosives will be stored on site.
GN. No. R 544	22	The construction of a road, outside urban areas,
Listing Notice		(I) with a reserve wider than 13,5 meters or,
1		(II) where no reserve exists where the road is wider than 8 metres, or
18 June 2010		(III) for which an environmental authorisation was obtained for the route determination in terms of activity 6 in Government Notice 387 of 2008 or activity 16 in Notice 646 of 2010.
		Project description
		Various roads of approximately 25 meters wide will be constructed.
GN. No. R 544	26	Any process or activity identified in terms of section 63(1) of the National
Listing Notice 1		Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).
18 June 2010		Protect description
		The proposed site and activities fails within an ecosystem that is threatened and in need of protection. In terms of Section 52(1)(a) of the
		National Environmental Management: Biodiversity Act, 2004 (Act No. 10
		of 2004).
		The site also fails within Critical biodiversity areas as adopted by the competent authority.
		There are also Camelthom trees on site that will need to be relocated.
		The activities and processes in Section 53(1) of the National Environmental Management: Biodiversity Act, 2004 will be identified by a
GN. No. R 544	47 (I) and (II)	suitable qualified specialist. The widening of a road by more than 6 metres, or the lengthening of a
Listing Notice		road by more than 1 klometre -
1		(I) where the existing reserve is wider than 13,6 meters; or
18 June 2010		(ii) where no reserve exists, where the existing road is wider than δ metres –
		excluding widening or lengthening occurring inside urban areas.
		Protect description Various roads will be lengthened and/or widened.
GN. No. R 545	5	The construction of facilities or infrastructure for any process or activity
Listing Notice		which requires a permit or license in terms of national or provincial
2		legislation governing the generation or release of emissions, pollution or
18 June 2010		effluent and which is not identified in Notice No. 544 of 2010 or included in the list of waste management activities published in terms of section 19 or the list of waster management activities are published in terms of section 19 or the list of waster management activities are published in terms of section 19 or the list of waster management activities are published in terms of section 19 or the list of waster management activities are published in terms of section 19 or the list of the list of th
		the National Environmental Management: Waste Act, 2008 (Act No. 59 of
		2008) in which case that Act will apply.
		Protect description The construction of the heap leach and waste rock dump as well as the
		pollution control dams would require a licence under Section 21 of the National Water Act, 1998 (Act No. 36 of 1998).

	5.5	The heap leach will also require an atmospheric emissions licence in terms of Section 21 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)
GN. No. R 545 Listing Notice 2 18 June 2010	26	Commencing of an activity, which requires an atmospheric emissions licence in terms of Section 21 of the National Environmental Nanagement: Air Quality Act, 2004 (Act No.30 of 2004), except where Activity 28 in Notice No. 544 of 2010 applies.
		Project description The heap leach will also require an atmospheric emissions licence in terms of Section 21 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)
GN. No. R 546 Listing Notice 3 18 June 2010	19(a)(i)(ee)	The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre. (a) In North West : I. Outside urban areas, In: (ec) critical biodiversity areas (Terrestrial Type 1 and 2 and Aquatic Type 1) as identified in systematic biodiversity plans adopted by the competent authority or In bioregional plans;
		Project description, The lengthening of existing roads and haul roads in Critical Biodiversity Areas (Terrestrial Type 1).
GN. No. R 546 Listing Notice 3 18 June 2010	14(a)(i)	The clearance of an area of 6 hectares or more of vegetation where 76% or more of the vegetative cover constitutes indigenous vegetation, except where such removal of vegetation is required for: (1) purposes of agriculture or afforestation inside areas identified in spatial instruments adopted by the competent authority for agriculture or afforestation purposes; (2) the undertaking of a process or activity included in the list of waste management activities published in terms of section 10 of the National Environmental Management: Waste Act, 2000 (Act No. 69 of 2000) in which case the activity is regarded to be excluded from this list; (3) the undertaking of a linear activity failing below the thresholds in Notice R.644 of 2010. (a) in Eastern Cape, Free State, KwaZulu-Natal, Gauteng, Limpopo, Mgumalanga, Northern Cape, Northwest and Western Cape: L All areas outside urban areas. <u>Proleot desortation</u>
GN. No. R 546 Listing Notice 3 18 June 2010	12(a) (b)	The clearance of an area of 300 square metres or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation. (a) Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Blodiversity Assessment 2004; (b) Within critical blodiversity areas identified in bloregional plans; <u>Protect descritication</u> The clearance of approximately 60ha of indigenous vegetation, in an ecosystem that is threatened, in need of protection and falls within Critical blodiversity areas, is required. (Terrestital Type 1 and Aquatic Type 2)
GN. No. R 546 Listing Notice 3 18 June 2010	13(a) and (c)(l)(cc) and (ee)	The clearance of an area of 1 hectare or more of vegetation where 76% or more of the vegetative cover constitutes indigenous vegetation, except where such removal of vegetation is required for: (1) the undertaking of a process or activity included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2006 (Act No. 69 of 2006), in

Figure 18: Example of the notification letters sent (pages 3-4)

Harmony Kalgold: Optimisation Project – Draft Scoping Report

Page 73 of 121

ON. No. R 546 3 4 (a) (b) (c) Explore area, in: Construction of framework (completent) authority or historical plans; Explored authority, Explored authority, Explore			which case the activity is regarded to be excluded from this list. (2) the undertaking of a linear activity failing below the thresholds mentioned in Listing Notice 1 in terms of GN No 644 of 2010. (a)Critical biodiversity areas and ecological support areas as identified in	Section 21(g): Disposing of waste or water containing waste in a manner which detrimentally impact on a watercourse – Heap leach, waste rock dump, grade ore stockplie, high grade ore stockplies, pollution control dams.
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Figure 20: Proof of postage of notification letters

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MAREETSANE FARMERS ASSOCIATION MADE BOGO. TEM:: 018 337 9065 CEL: 083 233 4503 To whom it may concern. RE: PROOF OF SUBMISSION OF THE NOTIFICATION LETTER AND BACKGROUND INFORMATION DOCUMENT FOR ENVIRONMENTAL AUTHORISATION FOR THE HARMONY KALGOLD MINE: OPTIMISATION PROJECT Please find a notification letter and Background Information Document for the application for environmental authorisation of the proposed new activities of Kalgold Mine on the Farm Spanover. Accepted by: Name:	23 July 2013	MR. GH PHOI (PARAMOUNT LITHEF) MOTSITLANG TRIBAL OFFICE
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AND BACKGROUND INFORMATION DOCUMENT FOR ENVIRONMENTAL AUTHORISATION FOR THE HARMONY KALGOLD MINE: OPTIMISATION PROJECT Please find a notification letter and Background Information Document for the application for environmental authorisation of the proposed new activities of Kalgold Mine on the Farm Spanover. Accepted by: Name:	To whom it may concern,	TELL: 018 337 9065 CELL: 083 233 4503
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Figure 21: Proof of delivery of letter to Tribal Authority

4.5.3 Comments obtained during the public participation phase

Figures 22-24 contain letters received from I&APs. The letters were handed to the EAP on the 6th of September 2013 at the focus group meeting. The issues raised in the letters were discussed during the meeting. The minutes of the meeting are included in table 16 under Section 4.5.7 of this document.

W de Chavonnes Vrugt

PO 366, Stella. 8650

Cell: +27 (0) 83 441 5828

Email: wimdc@lantic.net

6nd September 2013

Ms Emma Vorster,

Shangoni Management Services Pty (Ltd)

PO Box 74726,

Lynnwood Ridge. 0040

Dear Ms Vorster,

Re: Harmony Goldmine EIA

Further to previous correspondence regarding the above matter, we would like to take this opportunity to brief you on the various topics that we would like to table during the Public Participation meeting to be held on 6th September 2013.

Firstly some background. I am the owner of 3 farms adjacent to the Harmony Kalgold Mine namely Koedoesrand and part of Nottingham (SW direction) and Bakoven ($\mathbb{W} = \mathbb{W}^2$ direction) respectively.

From the advertisement in the Mafikeng Mail dated 23rd August 2013 we gather that the main portion of the new development at the mine will be on the farm Spanover. This farm borders the farm Bakoven.

For your information I would like to point out that we have established a piggery on Bakoven and a significant financial investment has been made to build a state of the art intensive production unit. The remainder of the farm is used for cattle farming.

As a result of the competitive nature of pig production in South Africa we deem it necessary to expand the piggery to stay economically viable. At this stage however any further development of this enterprise is inhibited by insufficient supply of water. As a matter of fact, contrary to previous years, we ran into water shortages during the previous summer (2012/13) To increase the water supply we drilled 6 holes in the vicinity of the piggery during the last few months. The depth ranged from 50 to 120 meters. Only one hole delivered some 700l water /hour which is totally insufficient for our specific requirements.

Figure 22: Letter received for a neighbouring farmer

We are of the opinion that the economic sustainability of the piggery is threatened by this specific problem.
Being direct neighbors of Harmony Kalgold we request that the following aspects be addressed and clarified in the EIA:
 The impact of the current pumping of water and usage in the mining process on groundwater levels of neighboring farms. Boreholes are drying up completely or delivering lower water output.
2) The impact of the new developments of the mine on groundwater levels of neighboring farms.
3. The impact of seepage water emanating from the slimes dam that may result in the pollution of groundwater and also polluting arable land.
 4) The impact of existing and new slime dams, mine dumps and stock heaps on the health status of man and all living organisms, including all kinds of animals, vegetation (natural and agricultural) and the environment in general due to spreading of dust over large areas surrounding the mining activities. 5) The impact of mine heaps on cell phone and shortwave radio signals due to the
ever increasing height of the existing slimes dam and mine dumps. We have virtually none and/or intermittent cell phone reception on Bakoven. It is not possible to run a business without efficient communication. The current security situation in South Africa also demands efficient communication channels especially in outlaying rural areas.
6. As neighbors we are experiencing increased and excessive noise levels from the mines activities, especially at night. This impact cannot be overlooked.
We trust that the effect of mining activities per se and the effect of the new development will be researched and addressed in the EIA compilation.
In summary, we are of the opinion that the uninterrupted supply of potable clean water and an unpolluted environment is a prerequisite for sustainable farming, job creation and well being of future generations.
Yours sincerely
Wim de Chavonnes Vrugt.

Figure 23: Letter received from a neighbouring farmer (Continued)

C

	Box 2439
	Florida Hills 1716
	2013 09 06
Shangoni Management Services (PTY) LTD	
Box 74726	
Lynnwood Ridge	
0040	
Dear Sir/Madam	
Re: Environmental Impact Study: Harmony Kalgold Operations: F	Registration of Interest
I represent a Group of Local Black Entrepreneurs from the Madik group includes Local Black Male and Female entrepreneurs and I development interventions that will contribute to the creation o not only include the areas mentioned but also some entreprene	have been focused on a number of of wealth in the larger Region which
Our group has employed the services of an experienced Busines: planned development. He assists with a number of interventions the supply to the National Roads Agency and the Municipalities i	s which includes stone crushing and
We wish to express our support to your planned study but wish t in the crushed stone that will be generated by the mine. We will Harmony Gold in the near future.	•
We thank you for the information you provided to us and would correspondence and also be invited to your discussions.	like to be copied on all future
Best regards	
Jack Setlhako	
076 558 8296	
Contact Address: <u>koot@yebo.co.za</u>	

Figure 24: Letter received from a local entrepreneur

4.5.4 Registering Stakeholders

All key stakeholders were registered and will receive this draft Scoping Report.

4.5.5 Press Notices

In accordance with the National Environmental Management Act (NEMA) 1998, (Act No. 107 of 1998), the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) and the National Water Act, 1998 (Act No. 36 of 1998), a notice was placed in the Mafikeng Mail on the 25th of July 2013 and the 23rd of August 2013 and *Die Noordwester* newspaper on the 26th of July 2013. The press notices are shown below.

Press notices are crucial to create awareness of the project and to reach a broader range of I&APs.

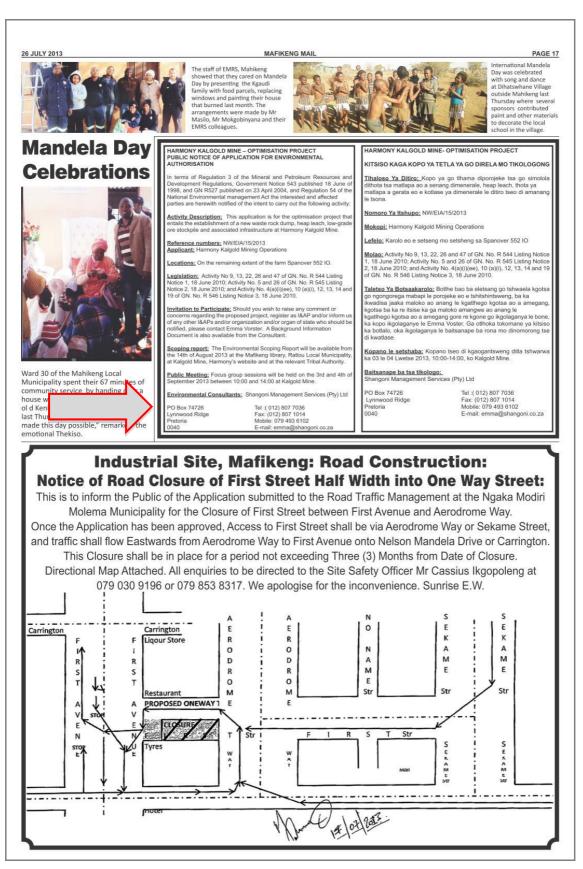


Figure 25: Newspaper advertisement placed in the Mafikeng Mail, 25 July 2013

26 JULIE 2013

BLADSY 14

NOORDWESTER

Kankerkliniek fondsinsameling - wat 'n oggend!

ICHTENBURG - Die Lichtenburg Kankerkliniek is wyd en buite vir werk, puik diens en gepaardgaande ondersteuning wat hulle aan kankerpasiënte lewe

Die kliniek is nie staatsondersteund nie en is op hulle eie aangewese vir fondse om hulle belangrike werk voort te sit in die gemeenskap van Lichtenburg en omgewing. Afgesien van die feit dat die woning

Afgesien van die feit dat die woning waarin die kankerkliniek gehuisves word, gratis aan hulle beskikbaar gestel is deur mnr Poena van Lichtenburg, is dit nog nodig om die dag-tot-dag, week-tot-week en maand-tot-maand uitgawes te dek. Daar is reiskoste, kragrekenings en baie ander kostes aan die bedryf van so 'n

onderneming verbonde en daarom moet daar spesiale fonds insamelingsprojekte geloods word om fondse in te samel en daardeur die voortbestaan van die kliniek te verseker. Die kliniek word op spesifieke dae deur

geneeshere van Klerksdorp se Onkologie afdeling besoek en word pasiënte deurentyd gemonitor en onderskraag. Daar word ook medikasie toegedien onder die bekwame toesig van Hannelie Nel, die geregistreerde

verpleegkundige. Daar is ook twee-weekliks 'n kliniek in Mafikeng wat ook ondersteun moet word.

Dit het ook alreeds 'n instelling geword dat die Kankerkliniek jaarliks 'n fondsinsamelingsveldtog loods wat hierdie jaar die tema "Durban July" voorgestel het.

Karlien van Jaarsveld, bekende kunstenaar het ook haar deel gedoen en die gaste vermaak met haar sang en optrede.

gaste vermaak met haar sang en optrede. Die opening van hierdie jaar sebyeenkoms is waargeneem deur Ds Cois Meiring van die AP Kerk en die seremoniemeester was die bekende Agust Schnepel wat hom uitstekend van sy taak gekwyt het. Tafels is deur individuele dames voorberei en gedek en sy moes dan ook self sorg dat al die plekke aan haar tafel verkoop word om sodoende die fondse te styf! Die tema van die jaar moes deurentyd in gedagte gehou word en het die dames of liewer die gasvrouens, hulle uitstekend van

liewer die gasvrouens, hulle uitstekend van hulle taak gekwyt en was die saal omskep in kleurvolle glorie en kon alles maar net bewonder word.

Die vinger-ete wat aangebied is, was ook uit die boonste rakke en geen persoon kon kla oor enige item of optrede nie aangesien

kla oor enige item of optrede nie aangesien alles 100% onder beheer was. Weereens moet die bestuur van Lichtenburg Kankerkliniek, René Engelbrecht en Hannelie Nel saam met hulle gasvrouens uitgesonder word vir puik werk wat gedoen is, nie net agter die skerms nie, maar ook vir die publiek om waar te neem waar te neem.

Hierdie is 'n glansgeleentheid wat jaarliks vol sale trek en wys dat Lichtenburg en omgewing werklik omgee vir dit wat nodig is!

Almal wat die oggend bygewoon het, was tevrede en daar sal nog lank oor hierdie spesifieke oggend gepraat word.



Figure 26: Newspaper advertisement placed in *Die Noordwester*, 26 July 2013



AUGUST 2013 MAFIKENG MAIL PAGE 11 Mafikeng Police celebrated Women's Day

A shikeng: The Mafikeng police women celebrated women's day activities in and around Mahikeng policing area. Other departments such as Correctional Services, Provincial Traffic and SARS also came to the party to participate in the crime prevention duties. A total of 64 police women from seven cluster police stations and a handful of men were roped in as support structure. A range of crime prevention duties

A range of crime prevention duties were done such as suspect raiding, Road block along Lichtenburg and Mahikeng Road and foot patrols around the CBD, shebeen raiding for compliance and 300 anti- crime hints were issued to motorists. Seven suspects were nabbed for various offences such as assault GBH, Corruption, and 22 traffic fines.

Corruption, and 22 traffic fines. Head of Mahikeng Support Services, Colonel Anne-Marie Swart addressed police women during the parade and advised them that SAPS needs dedicated women who strives for excellence and should at all times go an extra mile in everything they do. "Behind every successful organization there is a strong and tenacious woman," said the Colonel. "It is evident that



Police women at work on Women's Day.

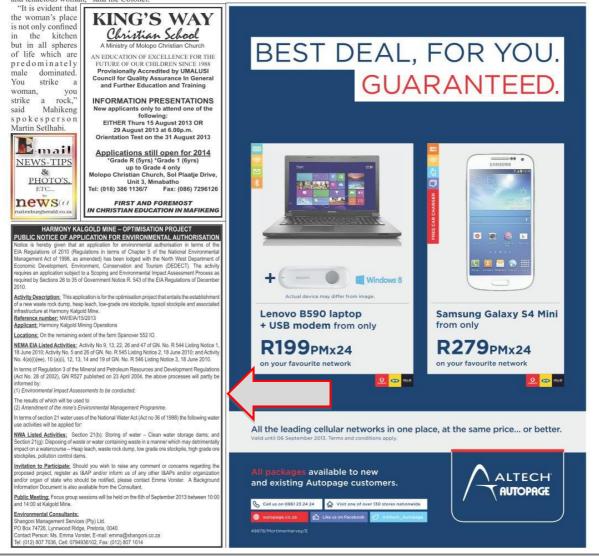


Figure 27: Newspaper advertisment placed in the Mafikeng Mail, 22 August 2013



4.5.6 Placement of Public Notices

The site notices (A2) were placed at the following sites:

- At the entrance to Spanover farm;
- At the community project skills centre in Kraaipan;
- On the gate at Kalgold Main Office;
- At the mine plant entrance;
- At the Harmony shops in Setlagole.
- At the Mafikeng museum;
- At the farmers' corporation in Mareetsane;
- At the Paramount Chief's office; and
- At the Ratlou Local Municipality buildings.



Figure 28: Site notice at the entrance to the farm Spanover 552 IO



Figure 30: Notice at the entrance gate to Kalgold main office



Figure 29: Notice at the Kalgold community project skills centre in Kraaipan



Figure 31: Notice at the shop in Setlagole







Figure 34: Notice at the Mareetsane farmers corporation

MAREETSANE HANDEL MEGANISASIE

Figure 35: Notice at the Paramount Chief's office

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Figure 36: Notice at Ratlou local municipality building

HARMONY KALGOLD MINE -	OPTIMISATION PROJECT	HARMONY KALGOLD	MINE- OPTIMISAT	ION PROJE	СТ
PUBLIC NOTICE OF APPLICA	TION FOR ENVIRONMENTAL				
AUTHORISATION		KITSISO KAGA KO		VA GO	
AUTIONISATION		TIKOLOGONG	FO TA TETEA	IA GO	DINLLA
terms of Pequilation 2 of the Mir	neral and Petroleum Resources and	TIKOLOGONG			
	nt Notice 543 published 18 June of				
	April 2004, and Regulation 54 of the	Tihaloso Ya Ditiro: Kopo			
	Act the interested and affected parties	matlapa ao a senang dimen ya dimenerale le ditiro tseo		/a matiapa a ge	erata eo e i
re herewith notified of the intent to can		ya dimenerale le ditiro tseo	di amanang le tsona.		
	, , ,	Nomoro Ya Itshupo: NW/E	IA/15/2013		
	on is for the optimisation project that				
	ste rock dump, heap leach, low-grade	Mokopi: Harmony Kalgold	Mining Operations		
re stockpile and associated infrastruct	ure at Harmony Kalgold Mine.				
Reference numbers: NW/EIA/15/2013		Lefelo: Karolo eo e setseng	mo setsheng sa Spanov	er 552 IO	
Applicant: Harmony Kalgold Mining Op					
ppiloant. Harmony Nargold Minning Op		Molao: Activity No 9, 13, 2			
ocations: On the remaining extent of	the farm Spanover 552 IO	2010; Activity No. 5 and 26 Activity No. 4(a)(i)(ee), 10 (a			
to the remaining enterior		18 June 2010.	a)(I), 12, 13, 14 and 19 of	GN. NO. R 940	D LISUNG NO
egislation: Activity No 9, 13, 22, 26	and 47 of GN. No. R 544 Listing Notice	18 June 2010.			
	of GN. No. R 545 Listing Notice 2, 18	Taletso Ya Botsaakarok	. Botilho hao ha elet	sana ao tshu	vaela koot
	10 (a)(i), 12, 13, 14 and 19 of GN. No.	ngongorega mabapi le por			
R 546 Listing Notice 3, 18 June 2010.		ao anang le kgatihego kgo			
-		amangwe ao anang le kgati			
	vish to raise any comment or concerns	le bone, ka kopo ikgolagan	ive le Emma Voster. Ga	othoka tokom	ane va kite
regarding the proposed project, regist	ter as I&AP and/or inform us of any	botlalo, oka ikgolaganya le t			
	organ of state who should be notified,	bound, one ingenigeniye is			
	kground Information Document is also	Kopano le setshaba: Kop	ano tseo di koaogantsw	ena ditla tshwa	arwa ka 03
available from the Consultant.		Lwetse 2013, 10:00-14:00, 1			
Seening report. The Environmental	Scoping Report will be available from				
	g library, Ratlou Local Municipality, at	Baitsanape ba tsa tikologo			
Kalgold Mine, Harmony's website and a		Shangoni Management Sen	vices (Pty) Ltd		
Public Meeting: Focus group session					
September 2013 between 10:00 and 14	:00 at Kalgold Mine.	PO Box 74726	T-1-(012) 00	7 7028	
	_	Lynnwood Ridge	Tel :(012) 80 Fax: (012) 80		
Environmental Consultants:		Pretoria	Mobile: 079 4		
Shangoni Management Services (Pty) I	Ltd	0040		a@shangoni.co	za
PO Box 74726	Tel :(012) 807 7036			S	
Lynnwood Ridge	Fax: (012) 807 1014				
Pretoria	Mobile: 079 493 6102				
0040	E-mail: emma@shangoni.co.za				

Figure 37: Wording of the site notice

4.5.7 Public meetings

A scoping phase authorities meeting was held on 14 June 2013 with DEDECT and the Department of Agriculture on site to inform the Regional Manager of the proposed project and to gain their input into the process. The minutes of the meeting is displayed in table 15, the attendance register is included in figure 38 and both documents are attached hereto as Appendix D.

Table 15: Minutes of the scoping phase authorities meeting

Kindly note the following that has been discussed in the KALGOLD-AUTHORITIES meeting and site visit; today 14 June 2013. This was done in the accompaniment of EIA contracted consultant - Shangoni Environmental Company.

Areas of discussion:

- Differentiation of the New K1 road from the proposed EIA applied for activities.
- Identification of the proposed EIA area on site.
- Ground truthing of the areas applied for Camel Thorn trees Permit.

Conclusions drawn:

- Existing New K1 road has not been included in the EIA application and should not be included.
- Existing New K1 road does trigger an EIA listed activity therefore a Basic Assessment should have been conducted for the application process to acquire Environmental Authorisation.
 Hence need for a Section 24G Rectification application to be submitted to the Authorities.
- EIA application should clearly identify the proposed haul road for Spanover Farm (outside mining area) as "Associated Infrastructure" and not "access road" so as to clearly disassociate it from the K1 road already existing within the Mining area.
- The tittle name for the EIA project should be changed from "Harmony Kalgold Mine: <u>Optimisation Project</u>" to another title that is more activity specific.
- A Basic Assessment should be submitted for the planned area " Expansion of A-Zone open pit" that has been applied for Camel Thorn trees Permit.
- A Basic Assessment should be submitted for the area planned for further expansion of new K1 road.
- Advised that these two Basic Assessments should be joined into one application.
- Area applied for Camel Thorn trees "Expansion of the ROM" will not require a Basic Assessment hence the Department of Forestry will take it as a stand-alone application that

does not require input from the EIA section.

NB: Shangoni will be making the necessary changes to the EIA application and the Environmental Person for Kalgold will submit to the relevant author.

Thank you for the visit and the valuable input.

Kind regards.

Irene Nadunga

Manager In Training: Kalgold Operations

Optimisation project information sessions were held on the 6th of September 2013 at Kalgold Main Office and on the 7th of September 2013 with Agri Mareetsane. Stakeholders have been notified of these meetings via the newspaper advertisements, on-site notices and telephonically, as well as in the BID. The minutes of the meetings, a copy of the presentation and the attendance register are below and attached as Appendix D.

Once the EMP and EIA for the proposed project have been finalised for submission another authorities meeting will be held with DEDECT, the DMR and DWA respectively. The purpose of this authorities meeting will be to present the findings of the EIA process to the authorities to assist them in the decision making process.

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SHAM Management Serv	GONI vices (Pty) Ltd	The Harmony: Ka DATE: 14 June 20	EGISTER: DAFF and DEI Igold Optimisation Proje 913 r - Kalgold Main Offices		ing and Site Visit	
NAME	COMPANY	DESIGNATION	TEL NUMBER	FAX NUMBER	E-MAIL ADDRESS	
Joe Mosupyoe	KALGOLA.	GM.	083395 3013.		joe. Mosupper @ 40	many.
LUFUNO NEUHUFUMBA	FORETRY	Forester	0529076118	0865801640	Nevnufumbah@ndo	· carte
Stor Municia	STACT	\sum	\$3,076 16672.24	0866594060	Smupicle @nups.so	1 /
P.H. TIOU	hompin	SHE OFFICES	0734349208		pietle longin.co.	Zei
IRANE NAAVNGA	KALGOLD	ENVITMIT	0783309977		irene-nadungapha	
M.Le Ranx	Sharqari	En. Cossitiont	0836900955	012 807 1014	mirette @ stageni	,ce.zc
EMMA VORSTER	SMS	ENV. CONS.	0794436102	11	emma@shangonirco.z	
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	1		· · · · · · · · · · · · · · · · · · ·			

Figure 38: Attendance register of the scoping phase meeting held on 14 June 2013

	GONI Vices (Pty) Ltd	The Harmony: DATE: 6 Septe	REGISTER: EIA INFOR Kalgold Optimisation P mber 2013 ony - Kalgold Main Offic	roject			
NAME	COMPANY	DESIGNATION	TEL NUMBER	FAX NUMBER	E-MAIL ADDRESS		
Nico Brits	Shangoni	Gensultant	0823499935	·	nico@stargonilo.	Ser	
Siden de been	MAJ Shop	Roll Chan	0836534657	018-6321519	<u>Elsergiteners</u> n	Q. G.	Ë,
THOMAS WILSON	HARMONY	ENV. MANAGER	092 424 9045		thomas - witson@ha	rmony,	0.
MADELLO MATICAD	Rodlog L-M	LED officer	018 3307000	67-07052810	maser pratice of	9.CB	
ROBERT RAKUBA	RATLOU L.M	MANQUER. M.M' OFFICE	0183307000	018 3307047	rober Quertion .gov.	<u>ر</u> م.	
ODIRILE SETIDISHO	KRAAIPAM	RESIDENT	0738887859	~			
TUMISANG TAGAME	AFRIBITS	Supplier	079 8740504	086616 5363	inpo Sapribit	5.00-2	6
Nethi Mkhize	Kapod	Hf Monager	0797617846		Nikosivethi-Whing	ahama	Į,
Modise Moloma	Un	Chief Sofeby Offic	0761294788		malise.motornelhe	- 5000140	ļ
Bm DURPER	Kalystel	Meeli Ferrin	0832809264	018332128	parend. dupper	Plany	<
Malailla Kalli Leboru	UNISA	Student	0792261606		nnehelengayah	00.Co	62
BONANG PULE	UNIOA	STUDENT	0721249756		bonangp@nwpg.qpu	ZG	
Nonfundo Gumbi	UNISA	STUDENT	0731199116		mfundoz equail		
Masethaba Mohalf	Unisa	student	07690257181		Makechata moh	14.701	
SEBOYA M-S	UNISA	Student	0828695029		msebergethu	69.	
Jankel	Sharyey	Cenalley	0823795931	3	jare shayen a	ته کر	
	-				0	,	

Figure 39: Attendance register o fthe meeting held on 6 September 2013 (page 1)

SHAR Management Serv	GONI vices (Pty) Ltd	The Harmony: DATE: 6 Septe	REGISTER: EIA INFOR Kalgold Optimisation P mber 2013 ony - Kalgold Main Offic	roject	
NAME	COMPANY	DESIGNATION	TEL NUMBER	FAX NUMBER	E-MAIL ADDRESS
LERATO MOLLHOAN	ru bwa	ASD: Wam	083 655 8312	086 224 1730	Mokhoantle 16 dwa
W. de Chavenue Vary	Farmer.		082 946 2303		willen pasy acservation . 200
W. DE CHAUSONES VILLE,	32		083 #41 5828		windcalantic. net
A- LiRosarees	<i></i>		0828938030		Ericramus a Gual. Con
Como Meyor	и		0823880579		roline@lonb, z. net
Ibe Aucomp	Equispectives	Social Scientist	0828280668		ilseap lanticinet
Sam-Maré Aucamp	Equispectives	Social Scientist	0529239689		5anmarie @mwebcu.za
SEALHARO K.J.	LOCAL ENTREPERN	uce RATION Storiecto	4-0765588296		Koot@yebo.co.22
EMMA VORSTER	SHANGONI	CONSULTANT	079 4936102		enna @ shangon: co. 29
ILENE NADUNGA	KALGOLD	ENVIRONMENTALM.	0783309977		Irene Nadenga Ethinneny &
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Figure 40: Attendance register of the meeting held on 6 September 2013 (page 2)

SHAR Management Ser	GONI vices (Pty) Ltd	The Harmony: DATE: 7 Septe	REGISTER: MAREETS Kalgold Optimisation P mber 2013 tsane Farmers' Hall		CIATION MEETING	
NAME	COMPANY	DESIGNATION	TEL NUMBER	FAX NUMBER	E-MAIL ADDRESS	
JanNel	Shawani	Consilient	0803795935-	-	jale sharpon roca	
Nico Brits	Shangoni	Konsultat	0873499955		nico @shergoni.ca	79
EMMA VORSTER	SHANGONI	KONSULTANT	0794936102		enna@shaqini.co	
ISMUCIA.	agi Maz	END.	0814689209		MUCLERISPICE	
Je Gouws	AGRI MEZ	L.D.	0823882675	-	MAKINS A (2 404005 4	
Ilse Aucamp	Equispectives	Social Scientist	6990,828,280		ilsea ejantici	
San-Marie Aliccimp	Equispectives	Social Scientisi.	08-29239687		Sannarie @ mwel	
Barend Duffer	Kelectel	Machinen form	08328092640		barend. duppes Ch	. U
Flip du Preez	Hari Marectone	hed.	0823899336		Flipdaudemil.	
Deen NZEWWENDT.	LOUDSER BAY	ban	059-3857040-		demalouhserboerde	
DJA Louisson	Louisia Dra	1-Alman	082 768565F		diskicaloubs - bulkse	· · · ·
P. Flectinad	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Rose.	082 9242536		petice@hotmail.	11
ENVICE BOTHA	Prima Pasta Biscuits	BUNKER bestuurabe	07/8960699	0183323004	ebotha@vonibm	K.com N
Betus Wessels	NWK Bepark	Bestuurder	0828068491		had marect same @	
Y MARGE	AGRI MAR.		0827791656	018 3811100	genitmoree 1 2 Janb	
J.H. Visser.	AGRI MAR.	Barr	0827314040		4 _	

Figure 41: Attendance register of the meeting held on 7 September 2013 (page 1)

SHAM Management Serv	GONÍ vices (Pty) Ltd	The Harmony DATE: 7 Sept	E REGISTER: MAREETS : Kalgold Optimisation P ember 2013 etsane Farmers' Hall		CIATION MEETING	
NAME	COMPANY	DESIGNATION	TEL NUMBER	FAX NUMBER	E-MAIL ADDRESS	
NEON SWANEPOLL	AGRI MRS.	FARMER	0833078332.	0(83322733	hswanepoel 3@gm	ail cons
Bert Champion	Agri MRS	Boer	0823882603	618 3322,700		
Eric Van Wyk.	BGRI-MARGE	Boex.	@823899422			
Fouris Charger	2 î	<i>\$*</i> *	0823882781	018-3322780	25.Varisykegn bellevue Blaw	tic. Lee
V	······································					

Figure 42: Attendance register of the meeting held on 7 September 2013 (page 2)

QUESTION RAISED	RESPONSE
Wim de Chavonnes Vrugt (WdCV) of	JN from SMS defines tailings as the fine
Koedoesrand and Bakoven asked for a	residue from the mining process and heap
definition of tailings and heap leach.	leach as a process in which cyanide and lime is
	utilised to extract gold from low grade ore in a
	heap leach pad. JN further declares that
	although the mine is applying for authorisation
	for the heap leach, it is only for possible future
	establishment.
Willem de Chavonnes Vrugt (WV) enquired	JN of SMS replied that he couldn't answer as
whether the tailings dam would increase in	the scope of this EIA is for the Spanover
height.	project that does not include a tailings dam.
Lerato Mokhoantle (LM) of the Department of	JN of SMS replied that Nico Brits (NB) of SMS
Water Affairs (DWA) asked for an indication	would indicate all water resources on an A2
on he location of all water resources in the	map after the meeting.
area.	
WV enquired about the availability of ECO	JN replied that the reports could be requested
reports to neighbouring farmenrs of the mine.	from the Department of Environmental Affairs.
	Ilse Aucamp (IA) of Equispectives added that
	the neighbours could request that the mine
	share the documents and establish a
	communication line for future enquiries.
WV asked whether neighbouring farmers	JM replied that he would investigate the
could speak to JM about establishment of	availability of documents and the improvement
communication forums.	of communication from the mine.
Gideon de Beer (GdB) enquired whether the	JN of SMS explained that the activity indicated
storage of water on the mine could be the	for the EIA entails the storage of potable water
reason that neighbouring farmers experience	and only small quantities of water would be
water shortages.	stored on Spanover.
WdCV commented that the problem is the	JN replied that part of the EIA is an
impact that the mine as a whole has on water,	investigation into cumulative impacts. The EIR
for example the impact of the tailings dam on	report and EMP will address any cumulative
water quality.	impacts that the mine may cause.
GdB commented that, although he	JN replied that the issue would be noted in
understands that the mine needs to expand	order for the mine to address is at a later stage.
and that most of the issues being raised did	Specialist studies would also address
not apply to the EIA, water is of big	environmental issues.
importance. He felt that the mine did not	

Table 16: Questions	s raised at the infromatior	session held or	6 Sontombor 2013
Table To. Questions	s raised at the minomation	i session neid of	i o September 2015

address issues raised in the past adequately.	
WV asked whether the water use license (WUL) for Spanover would include the volume of water to be extracted, seeing that wastewater is a main use to be applied for.	JN replied that no water would be extracted on Spanover, only stored. Kalgold is in the process of a mine-wide WUL application. JM could comment on the progress. All water activities on Spanover would be included in the WUL.
	Thomas Wilson (TW) of Harmony added that the DWA would indicate how much water might be extracted in the conditions of the WUL. The mine will make the WUL available to the public as soon as it is received.
WV wanted to know whether water-monitoring results were made public.	Irene Nadunga (IN) of Kalgold replied that monitoring results could be shared. She commented that the WUL application had already been submitted so it would need to be amended to include the Spanover activities.
	JN added that it should be kept in mind that the listed activities under the National Water Act (NWA) applied for have the potential to pollute water. The water to be stored would only be potable water.
Corné Meyer, a neighbouring farmer, asked who monitors how much water is extracted from boreholes. He commented that water extraction by the Mine is not controlled.	JM replied that water extraction is monitored monthly. The mine also works according to a water balance. A sustainability report is generated from the monitoring data.
WdCV asked whether the neighbours should not have been informed that the mine had applied for a WUL.	JN added that the mine would have to comply with the conditions set in the WUL. JN replied that the application of a WUL depend on the volume of water extracted. Below a certain volume, a WUL is not required.
LM asked how many storage dams is planned	IN added that no water would be extracted on Spanover. Potable water would be extracted from existing boreholes on the mine and transported to Spanover. JN replied that water would be stored in JoJo

for the optimisation project.	tanks, not storage dams. The number of tanks
	has not been calculated yet.
	NB added that the volume of water to be stored
	is low and would fall under a general
	authorisation.
	IN further added that due to the fact that the
	water would be stored within a mining area, the
	DWA needs to be informed of the activity.
	JN commented that it is better to inform the
	DWA of the water activity and have the DWA
	conclude whether a license is required or not.
WdCV enquired whether a study on the	JN replied that a geohydrological study has
extraction of water exists.	been completed on the mining area and this
	will be expanded to include Spanover.
	NB added that this study should include a
	hydrocensus within a 1km radius from the
	mine.
GdB enquired about the average borehole	Barend Dupper (BD) of Kalgold informed him
depth.	that the boreholes are either 50m or 100m
	deep.
WdCV requested a specialist study on the cell	JN replied that this would be looked into.
phone and radio signal in the area. He	
explained that the neighbouring farmers	
experience poor reception. Proper	
communication is vital. He added that the	
signal has worsened due to the expansion of	
the tailings dam.	
M. Seboya of UNISA asked what the footprint	JN replied that a list of potential infrastructure
was of each of the listed activities applied for.	is applied for. The footprint would be
	calculated as soon as the final designs are
MdOV apprised about a schebilitation should	available.
WdCV enquired about a rehabilitation plan for	JN confirmed that a rehabilitation plan would
the activities.	be included as part of the EMP.
WdCV asked whether the mine has done a	JN replied that this is included in the monthly
heavy metal analysis on water and soil.	monitoring that the mine does.

	IN added that the manitoring data is evolution
	IN added that the monitoring data is available.
WdCV wanted to know whether acid mine	JN answered that the waste rock material will
drainage occurs at Kalgold.	be tested for leachate.
Malaika Koali-Lebona of UNISA commented	JN replied that a biodiversity assessment had
that, although it is indicated that the	been done for the mining area. Spanover had
threatened camel thorn species will be	been previously disturbed by agricultural
impacted upon, no biodiversity assessment is	activities. The camel thorn trees established
planned according to the list of specialist	on a disturbed area less than 10 years ago
studies.	when crop cultivation was discontinued. It will
	be assessed whether further studies would be
	required.
Robert Rakuba of Ratlou Local Municipality	JM replied that Kalgold is in talks with the
enquired about the backfilling of the D-zone	Department of Mineral Resources about the
pit.	issue.
WV thanked SMS for facilitating questions	JM welcomed the comment. He added that a
and comments not related to the EIA. He	communication channel is established between
added that improvement in communication	the mine and the local farmers.
between the mine and its neighbours is vital.	
WdCV explained that not all neighbouring	The comment was noted.
farmers are part of Agri Mareetsane, the	
farmers' union with whom the mine	
communicates most frequently.	
Jack Setlhako, an entrepreneur from	The comment was noted.
Kraaipan, reiterated WdCV's comment about	
communication. He urged the mine to engage	JN explained that SMS and the mine tries to
the entire community and not only certain	utilise as many as possible channels to
groups. He added that it has been suggested	communicate with the community, such as
that the DWA negotiate with the mine to	advertisements, site notices and letters.
establish a water purification plant that would	
benefit Kraaipan. The social and labour plan	
needs to be communicated.	
WdCV asked whether it was possible to	JM replied that they could have a meeting
discuss the water issues that the farmers	afterwards.
experience with JM after this meeting.	

Table 17: Questions raised at the information session held on 7 September 2013

QUESTION RAISED	RESPONSE					
Hans Muller asked whether the heap leach	JN replied that a heap leach would definitely					
would have an effect on groundwater quality.	impact ground water quality, but the					
	Department of Water Affairs requires that heap					

leach pads be lined. Pollution control dams are
also used to contain run-off from the heap
leach pads. He further explained that the
cyanide used for gold extraction breaks down
within days if released into the environment,
rendering it a short-term impact. The extent of
the impact would have to be determined
through monitoring. JN added it is not definite
that a new heap leach pad will be constructed,
but the application for authorisation includes
this activity for future use.

4.5.8 Issuing I&APs and Stakeholders with a Draft Scoping Report

This draft Scoping Report will be sent to all Departments and Organs of State as well as all registered I&APs in order to obtain their comments. The report will also be submitted to the North West Department of Economic Development, Environment and Tourism for review.

4.5.9 Conclusions of the Public Participation Exercise

In conclusion, the public participation exercise has provided adequate information to enable an understanding of what the proposed project would entail and also to address the concerns and comments of this Environmental Assessment.

5. NEED AND DESIRABILITY FOR THE ACTIVITY

A need and desirability for this project is evident from the following perspectives:

5.1 The mine

Since 1996, only the D-Zone ore body has been economically mined, specifically because of better gold grade and its larger size. The D-Zone Opencast Pit has reached the end of its economic life and the Processing Plant may carry on treating the available low-grade heap leach stockpiles for a year after mining operations have stopped.

Ongoing efforts to sustain and extend the LoM at Kalgold have (with the gold price permitting), made it feasible to economically mine the A-Zone, the Watertank and Windmill ore bodies. Limited volumetric airspace over the active WRD lead to the initiation of the proposed optimisation project. The proposed optimisation project will be located closer to the A-Zone, Watertank and Windmill ore bodies, resulting in a significant reduction in production and transport costs

5.2 Local community

Considering the significant contribution the mine makes to the economy (local and national), it is in the local and national interest to ensure that Kalgold remains a productive and profitable entity.

The community will benefit from the proposed heap leach due to the fact that it is a labour intensive activity. It is the "low technology" solution for low-grade ores, and as such requires more people doing things that are more transferable to other industries. Transferable skills learned by heap leach personnel include pipe laying, irrigation systems, operating and maintenance of pumps and controls, surveying, earthworks, liner construction and maintenance, slope and erosion control, reclamation and revegetation, and various other aspects of civil construction. All of these have broad applications outside the mineral industry, making a heap leach work force highly employable (Smith, 2004).

6. IDENTIFIED ALTERNATIVES

The following definition of "alternatives" is given in the EIA Regulations of 18 June 2010: "alternatives", in relation to the proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to-

- a) the property on which or location where it is proposed to undertake the activity;
- b) the type of activity to be undertaken;
- c) the design or layout of the activity;
- d) the technology to be used in the activity;
- e) the operational aspects of the activity; and
- f) the option of not implementing the activity".

Typically, alternative assessments are conducted to assist in comparing various projects or attributes of projects that will occur. The most critical comparison is evaluating any proposed project against the No-Go option. The alternatives assessment then considers alternatives to project site selection for the proposed development; alternatives to layout of the development; and alternatives to construction methodologies and/or materials used for the development.

The alternatives assessment was conducted using a simple cost-benefit analysis of each proposed alternative, through assessing various environmental attributes. These attributes can include physical (geology and soils, surface water quality and quantity, groundwater quality and quantity); biophysical (flora and fauna, sensitive environments); and social (site of archaeological or cultural importance, land use issues, social health and welfare).

The impact of the each alternative was then evaluated in terms of whether it has a positive, negative, or no impact. In this instance, the impact is not evaluated in terms of significance but rather whether or not it will arise. Positive impacts are assigned a value of 1; no impact a value of 0; and a negative impact a value of -1.

By adding all of the attribute scores for each alternative, a suitability score is derived that indicates the preferred alternative. A total positive score indicates the project benefits outweigh the potential negative impacts, while a total negative score indicates the project environmental costs outweigh the potential benefits. Essentially, the highest scoring alternative is then carried forward for full impact evaluation.

6.1 No-Go Option

The potential impact of the preferred project option on environmental and socio-economic attributes identified during the assessment phase is evaluated against the potential impact of the no-go option on the same attributes. The summary of this assessment is provided in table 18 hereafter.

Table	18:	Develo	pment	vs.	No-Go	Option.
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Attribute	Development Option	No-go Option					
Physical environment							
Air Pollution	-1	-1					
Noise Pollution	-1	0					
Water Quality	-1	-1					
Water Quantity	-1	-1					
Visual Aesthetics	-1	0					
	Biophysical environment						
Fauna and Flora	-1	-1					
Sensitive Environments	-1	-1 -1					
	Social environment						
Traffic	0	0					
Impact on property values	1	-1					
Safety and security	1	0					
National and regional economy	1	0					
Infrastructure development	1	0					
Total	-3	-6					

As can be seen in the table above, the development option (optimisation project) is preferred to the No-Go option (the current practices), as derived from comparative analysis.

6.2 Alternatives

6.2.1 Activity and process alternatives

The activity is the construction of a new waste rock dump, heap leach, low-grade ore stockpile and associated infrastructure. The end product of this process is gold that can be sold to generate an income for Harmony Kalgold Mine. Reasons why activity alternatives were not considered are given below.

• Waste rock dump - The mining operation results in mine residue in the form of waste rock and slimes. The existing slimes dam will be used but due the fact that capacity has been reached for the current waste rock dump, a new waste rock dump needs to be constructed.



- Heap leach According to the EMP dated 2009, extensive metallurgical tests and feasibility studies, conducted by the Council for Mineral Technology (Mintek) in 1995, showed that the ore at Kalgold is non-refractory and that gold is economically extractable by conventional carbon-in-leach (CIL) technology, yielding high (>91%) recoveries. The ore in the oxidised portions of the deposits are amendable to gold extraction by the low cost heap leach method, which recovers between 60-70% of the gold.
- Low-grade ore stockpile The stockpiles are utilised to store low-grade ore until it is transferred to the heap leach.

6.2.2 Location alternatives

Due to economic factors, the existing waste rock dump proves too far from the active pits to be an economically viable option for use by the Watertank and Windmill zones. As a result a waste rock dump closer to the Watertank and Windmill Zones is required, as this will reduce the associated transportation costs considerably. Subsequently, the Harmony Central Projects Function have been asked to conduct high level trade-off study in order to evaluate options available for the waste rock dump site at the Harmony Kalgold Mine, and to recommend the preferred site. The evaluation is included in table 19, the trade-off matrix in table 20, and an image of the alternative sites in figure 43.

Advantage	Disadvantage						
WASTE DUMP 1							
 Close proximity to the A-zone pit. On the Harmony property. 	 Close proximity to the watercourse (pollution by nitrates and sulphides). Swampy area. Topsoil already stored on the proposed footprint, and costs will be incurred to remove Pit stability concerns (dump should be located on the other side of the pit). Reef outcrops in the footprint, and placement will sterilise reserve Limited expansion capacity. 						
WA	STE DUMP 2						
 Close proximity to the A-zone pit. No reef outcrops (confirm by the electromagnetic survey). Good potential for the future expansion. Potential for the topsoil storage. Not in close proximity to the watercourse. 	 Proposed area does not belong to Harmony. Possible objections by the Department of Agriculture and the DMR. Cost to purchase land. EMP approval might delay project. 						
WÀ	STE DUMP 3						
 Close proximity to the A-zone and Watertank pits. Large footprint. Capacity for future expansion. On the Harmony property. 	 Inferred resource in the footprint. Longer hauling distance. 						

Table 19: High-level evaluation of possible sites

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WASTE DUMP 4								
 Large footprint. Capacity for future expansion. On the Harmony property. 	 Far away from the A-zone pit. Reef outcrops in the footprint. 							
VV	ASTE DUMP 5							
On the Harmony property.Close proximity to the A-zone.	 Limited capacity. Possible objection by the Department of Water Affairs. Setting precedent for the other pits. Sterilising the ore body below current pit floor. 							
W	ASTE DUMP 6							
Large footprint.On the Harmony property.Capacity for future expansion.	Far away from the A-zone pit.Reef outcrops in the footprint.							
W	ASTE DUMP 7							
On the Harmony property.Reasonable space available.	 Far away from the A-zone pit. Logistics constraint at the bridge. Ore transport using this same road. Limiting the footprint available for the slime dams expansion. 							

Table 20:	Waste	rock	dumps	location	trade-off	matrix
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	Purchase price	Distance	Ease to get EMP	Area available	Future expansion	Ore body sterilisation	Watercourse pollution	Pit stability	Total	Ranking
Weighting:	3	15	8	5	5	5	7	5		
Options:				Score	ed out of 5 (5 be	st, 1 worst)				
WASTE DUMP 1	5	5	5	4	2	3	1	3	197	3
WASTE DUMP 2	1	5	1	5	5	4	7	5	230	1
WASTE DUMP 3	5	4	5	5	5	3	4	4	228	2
WASTE DUMP 4	5	1	4	5	5	3	5	5	187	4
WASTE DUMP 5	5	5	2	3	2	4	1	5	183	5
WASTE DUMP 6	5	1	4	5	5	3	5	5	187	4
WASTE DUMP 7	5	1	4	3	3	5	5	5	177	6



Figure 43: Waste rock dump location alternatives

6.2.3 Site layout alternatives

As the entire property (Spanover 552 IO) is owned by Harmony and the agricultural activities have been discontinued (shown in white on the figure below), the construction of the waste rock dump, heap leach, low-grade ore stockpile and associated infrastructure could occur at various locations on the site.

To keep the operations as concentrated as possible (for economic and logistical reasons) the proposed site for the activity is adjacent to the newly built K1 road, for ease of access. Most of the footprint area for the proposed project is already disturbed (due to agriculture activities), but the proposed infrastructure will extend into a camel thorn tree forest.

Alternatives will continue to be investigated by discussion with Authorities, I&APs, and the client, and the 'No Project Option' will be included in the discussions. The EIA (including EMP) document will include the alternatives identified and investigated for the mentioned project as well as the advantages and disadvantages of each

7. IDENTIFICATION OF ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

This part of the document focuses on the identification of the major potential impacts the activities, processes and actions may have on the surrounding environment. It indicates the major impacts that these activities may have on the environmental components associated with the site, as required in terms of Regulation 28 (g) of R.543 of the EIA Regulations, 2010, under the NEMA, 1998. Furthermore, it describes the processes to be undertaken to ensure that the identified impacts are mitigated.

7.1 Activities to be undertaken as part of the proposed project

The activities associated with the proposed project will impact on the surrounding environment throughout the different project phases.

All the actions, activities and/or processes relevant to the proposed project that may cause pollution or environmental degradation, if not suitably mitigated or managed, have been identified and categorised. The relevant activities, listed per life cycle phase, are given below.

7.1.1 Construction phase

The following activities are anticipated during the construction phase of the project:

- Surveying and pegging out of the construction areas for the waste rock dump, heap leach, low grade ore stockpile, topsoil stockpile, haul routes, dirty and clean water systems, power lines, potable water pipelines, sewage pipelines, pollution control dam, offices and workshop complex.
- Establishing and, upon completion, rehabilitation of construction sites/camps at the proposed construction areas with lay-down yards, machinery, vehicle parking areas, service areas, water supply, portable toilets and temporary waste storage.
- Utilisation of existing access roads to the proposed office complex and discard facility sites.
- Transporting materials and personnel to the proposed sites.
- Clearing of vegetation for the construction of waste rock dump, heap leach, low grade ore stockpile, topsoil stockpile, haul routes, dirty and clean water systems, pollution control dam, offices and workshop. This would require a permit for the removal and relocation of camel thorn trees.
- Laying the plastic membranes for the heap leach pads.

- Sloping the pad base and creating channels to facilitate the flow of the pregnant leach solution from the heap to the collection pond.
- Temporary stockpiling of soil, spoil and imported materials at the various construction sites.
- Pipe jacking or trenching through, roads and watercourses.
- Dewatering trenches, as required.
- Preparing and laying of material for construction.
- Construction of the proposed infrastructure associated with proposed discard facility, including amongst other:
 - Haul roads.
 - Dirty and Clean Water Separation Systems.
 - The Workshop Complex.
 - The Office Complex, including Water and Sewage system for the workshop and offices.
 - Diesel storage tanks.
 - \circ Power Lines.
 - o Pollution Control Dam.

7.1.2 Operational phase

During the Operational Phase, the new waste rock dump, heap leach and low-grade ore stockpile will be commissioned and the depositing of mine discard will commence. The associated infrastructure will also be utilised in support of the functioning of the discard facility. The following activities are anticipated during the operational phase of the proposed project:

- Utilisation and maintenance of the facilities at the office complex and workshop complex.
- Conveyance of discard material from the pit to the waste rock dump via trucks.
- Dust suppression of haul roads.
- Storage of potable water at the office complex.
- Utilisation and maintenance of the dirty and clean water systems, including the pollution control dam.
- Repairing and replacing infrastructure;
- Lighting/illumination at the different infrastructure areas.
- Progressive development of the new facilities.
- Utilisation and maintenance of the power supply and various pipelines.
- Utilisation and maintenance of the access and haul roads.

7.1.3 Decommissioning phase

The following activities are expected during the decommissioning phase of the proposed project:

• Rehabilitation and restoration of the disturbed areas.

7.2 Impact assessment methodology

It is required by Regulation 28 (g) of R.543 of the EIA Regulations, 2010, that major potential impacts on the surrounding environment, as a result of the proposed activity, are identified during the Scoping Phase.

Regulation 31 of R.543 of the EIA Regulations, 2010, requires that an EIR includes an assessment of the status, extent, duration, probability, reversibility, replaceability of resources and mitigatory potential of the major potential environmental impacts of the proposed activity.

Identification of the major potential impacts has therefore been included as part of the requirements for the compilation of the Scoping Report. The prediction of the nature of each impact, the evaluation of each impact by rating its significance and the management and mitigation measures adopted to address each impact, will be assessed in the EIR using the criteria presented below.

7.2.1 Methodology

Impact assessments should be conducted based on a methodology that includes the following:

- Clear processes for impact identification, predication and evaluation;
- Specification of the impact identification techniques;
- Criteria to evaluate the significance of impacts;
- Design of mitigation measures to lessen impacts;
- Definition of the different types of impacts (indirect, direct or cumulative); and
- Specification of uncertainties.

In broad terms, the impact assessment for this project will include the following:

- All potential impacts of the proposed activity will be identified and assessed;
- The nature, extent, magnitude and duration of all potentially significant impacts will be predicted;
- A range of mitigation measures that could diminish the impacts will be identified; and
- The significant of residual impacts that remain, after the proposed mitigation measures are implemented, will be evaluated.

The construction, operational and decommissioning phases of the project will be considered whilst identifying impacts. A detailed understanding of the proposed activity will be obtained to ensure that all the potential impacts to be identified. The following process will be followed to identify and assess the potential impacts of the proposed activity:

- The current environmental conditions will be determined in detail. This will act as a baseline against which impacts can be identified and measured;
- The changes that will occur in future, should the proposed activity not occur, will be identified;
- A detailed understanding of the activity will be obtained in order to fully understand its consequences; and
- The significant impacts that will occur as a result of the proposed activity will be identified (should the activity be authorised).

After all impacts have been identified, the nature of each impact can be predicted. The impact prediction will take into account physical, biological, socio-economic and cultural information and will then estimate the likely parameters and characteristics of the impacts. The impact prediction will aim to provide a basis from which the significance of each impact can be determined and appropriate mitigation measures can be developed. The definitions that shall be used during the assessment and evaluation of potential impacts are described in table 21.

CATEGORY	VALUE	DESCRIPTION OR DEFINITION	
Statement		A brief written statement, stating which environmental aspect is impacted	
		by a particular project activity or sequence of project activities.	
Type of Impact		This defines what type of impact takes place. No value is allocated for a	
		type of impact. Cumulative impacts will be dealt with in a separate table.	
Direct		Direct result (impact) of an action (aspect).	
Indirect		Impacts that are not a direct result (impact) of the strategic action (aspect)	
		but occur away from the original source of impact or as a result of a	
		complex pathway. Indirect impacts are often called secondary, tertiary	
		etc. impacts, depending on how many steps there are between the	
		original source and its impact	
Cumulative		The impact on the environment which results from the incremental impact	
		of the action when added to other past, present, and reasonably	
		foreseeable	
		future actions.	
Extent		Extent to which the impact will occur	
Site	1	Only as far as the activity	
Local	2	Site and immediate surroundings	
Regional	3	Impact on a regional scale	
National /	4	National or International	
L			

Table 21: Definitions that shall	he used in the accessment	and avaluation of impacts
Table 21. Deminitions that shall	be used in the assessment	and evaluation of impacts

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CATEGORY	VALUE	DESCRIPTION OR DEFINITION
International		
		The term or time period during which the impact is expressed, not the
Duration		time until the impact is expressed. Where necessary, the latter is
		separately specified.
Temporary	1	This is very short term, usually a construction impact
Short term	2	During the operational activities
Long term	3	During closure / decommissioning of the operation
Permanent	4	Post-closure phase
Impact Phase		The time period until the impact is expressed. This is not the time period
inipact Fliase		during which the impact is expressed.
Temporary	1	This is very short term, usually a construction impact
Short term	2	During the operational activities
Long Term	3	During closure / decommissioning of the operation
Permanent	4	Post-closure phase
Severity		The magnitude of the potential impact
Very Low	1	Natural, cultural and social functions are not affected
Low 2		Affected environment is altered but natural, cultural, and social functions
		and process continue both in a modified way
Moderate	3	Natural, cultural and social functions and processes are altered to the
Moderate 3		extent that it would temporarily cease
High	4	Natural, cultural and social functions and process are altered to the extent
ingn		that it would permanently cease
Probability		The likelihood of the impact occurring
Improbable	1	Low possibility because of design or historic experience
Probable	2	Distinct probability to occur
Highly	3	Most likely to occur
probable		
Definitely	4	Will occur regardless of any prevention measures and/or there is a history
		of (an) incident/s and/or complaints
		This is integration (i.e.an opinion) of the severity, type, extent, probability
Significance		and duration of the impact. It is the best judgment of whether the impact
0		is important or not within the broad context, once mitigation is taken into
		account.

CATEGORY	VALUE	DESCRIPTION OR DEFINITION	
		By adding the value of the extent, duration, severity and probability, a	
		significance value will be obtained for each impact. A significance rating	
		is assigned twice to the impact. Firstly, to indicate significance without	
		mitigation or optimization and secondly, to indicate significance after	
		mitigation or optimization. This is done to highlight the importance of	
		mitigation or optimization of potential impacts.	
No impact		A potential concern or impact, which, upon evaluation, is found to have	
No impact		no impact.	
Moderate Low	1-6	Impacts will be of very low significance if the added values are between 1	
moderate Low	1-0	and 4.	
Low	7-10	Impacts will be of <u>low</u> significance if the added values are between 5 and	
LOW	7-10	8.	
High	11-14	Impacts will be of high significance if the added values are between 13	
		and 16.	
Very High	15-16	Impacts will be of very high significance if the added values are between	
veryrngn	10-10	17 and 20.	

Below is an example of the risk assessment that will be conducted for each identified impact of the proposed activity:

Table 22: Environmental risk assessment: Fire establishment

Activity: Construction activities.			
Nature of Environmental Impact: Potential disturbance of natural vegetation surrounding the			
proposed site as a result of runaway veldt fires caused by workers or contractors.			
Before Mitigation			
Extent of the Impact	2		
Duration of the Impact	1		
Intensity of the Impact	2		
Significance of Impact = Extent of Impact + Duration of Impact + Intensity of Impact			
Probability			
Environmental Risk = Significance of Impact X Probability			
Objective of Mitigation Measures			
To prevent the occurrence of avoidable veldt fires.			
Proposed Mitigation			
• Basic fire-fighting equipment is to be placed at strategic locations on site (e.g. at the site office,			
flammable material store and watchman's container).			
• Equipment is to be maintained in good working order to the satisfaction of local fire authorities.			
• No open fires are permitted. A dedicated braai facility may be permitted in an area approved by			

- the ECO, if the campsite in close proximity to firefighting equipment. At no time is a braai fire to be left unattended.
- Smoking is prohibited near places where any readily combustible or flammable materials are present. Notices are to be prominently displayed prohibiting smoking in such areas.
- Welding, flame cutting and other hot work is only to be undertaken in places where the

necessary safety precautions are in place (i.e. not near potential sources of combustion and with a fire extinguisher immediately accessible).

- All flammable materials are to be stored in a suitable, lockable storage area.
- Combustible materials may not accumulate on the construction site.
- Cooking is to be restricted to bottled gas facilities in designated areas approved by the ECO. This facility is to be supervised and strictly controlled.
- Fire extinguishers must be readily available.

After Mitigation		
Extent of the Impact	2	
Duration of the Impact	1	
Intensity of the Impact	1	
Significance of Impact = Extent of Impact + Duration of Impact + Intensity of Impact	4	
Probability	1	
Environmental Risk = Significance of Impact X Probability	4	

7.3 Impacts Identified

The main impacts identified for the proposed optimisation project are listed below. The environmental impact assessment report will include a full risk assessment of all environmental impacts. The Environmental Management Programme (EMP) will set out mitigation measures to be implemented during the construction, operational and decommissioning phases.

7.3.1 Construction phase

Activity	Aspect	Impact
Clearance of topsoil and	Disturbance of soil due to	Destruction of natural vegetation /
vegetation for the	clearance of topsoil and	biodiversity, leading to destruction of
construction of the waste	vegetation.	natural habitats. Steep slopes of newly
rock dump, heap leach and		constructed roads may become a barrier
low-grade ore stockpile		/ trap to small mammals and reptiles that
		could lead to temporary fragmentation of
		populations and temporarily isolate
		populations
		Potential soil erosion can take place due
		to exposed surfaces leading to an
		increase in suspended solids
		concentration in runoff water
		Potential water siltation can take place
		due to exposed surfaces leading to an
		increase in suspended solids
		concentration in runoff water.
		Invasive plant establishment. With the

Table 23: Construction phase impacts

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Activity	Aspect	Impact
		disturbance of areas, it is possible that declared alien and or invasive plants might establish themselves
	Dust generation due to disturbance of soil and removal of vegetation cover	Impact on air quality as a result of vehicular movement.
Use of construction vehicles and machinery	Ineffective maintenance of vehicles and machinery	Potential groundwater pollution due to hydraulic leakages Potential surface water pollution due to
		hydraulic leakages Accumulation of contaminants in the soils, resulting in soils becoming unsuitable for vegetation growth. Unhealthy drinking water for animals due
		to surface water pollution. Potential soil pollution hydraulic pipe breaks
	Generation of noise as a result of construction activities	Potential air pollution. Health hazard to workforce.
	Emissions from machinery and vehicles	Emissions from construction vehicles may cause air pollution leading to an impact on the ozone. The major pollutants are SO ₂ , NO ₂ and CO ₂ .
	Construction vehicles not abiding to designated speed limits	Generation of noise may occur during construction vehicles usage. Generation of dust may occur during
Stockpiling and temporary storage of topsoil	Change in visual topography.	construction vehicles usage. Stockpiling of topsoil may lead to a visual impact.
	Dust fallout and inhalable PM emissions may be generated due to temporary stockpiling of topsoil.	Air pollution
		Particles small enough to stay airborne may be inhaled through the nose or the mouth causing disease.
		Dust deposition on vegetation. Impact on visibility.
	Incorrect stockpiling of topsoil	Erosion of stockpiles can take place in

Activity	Aspect	Impact
		the event of water running down the topsoil stockpiles resulting to an increase in suspended solids concentration in
		runoff water

7.3.2 Operational phase

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lable	24:	Operational	phase	impacts

Activity	Aspect	Impact
Transporting of material	Hydraulic pipe breaks resulting from	Hydraulic pipe breaks on the trucks
and waste rock	inefficient maintenance of vehicles.	transporting the low-grade ore and waste
		rock may lead to soil pollution.
		Hydraulic pipe breaks on the trucks
		transporting the low-grade ore and waste
		rock may impact directly into surface
		water or indirectly through the pollution of
		soil may lead to surface water pollution.
		Pollution of surface water due to the
		hydraulic pipe breaks on the trucks
		transporting the low-grade ore and waste
		rock may indirectly lead to groundwater
		pollution if seepage takes place.
	Release of emissions by trucks	Emissions from trucks transporting the
	transporting material	low-grade ore and waste rock may cause
		air pollution.
	Generation of dust from	Generation of dust may occur during the
	transportation of material	transporting of the low-grade ore and
		waste rock onto the trucks.
		Dust deposition on vegetation
		Impact on visibility.
Deposition of waste rock	Illegal access to WRD	Injury or death of community or livestock
	Contaminated surface runoff and	Pollution of water resources and soil in
	seepage of pollutants from the WRD	the area used for agricultural or potable
		purposes by the community
	Change in topography and visual	Disturbance of 'sense-of-place' of the
	aspect	community
		Change in surface water run-off direction

Activity	Aspect	Impact
		/ flow patterns
	Dust generation from the WRD	Nuisance to the community from dust
	Uncontrolled access for community	Safety risk due to WRD and plant residue
		deposits
Storage and handling of	Incorrect storage and handling of	Injury or death of employees
explosives	explosives	
Storage and handling of	Incorrect storage and handling of	Safety risk due to exposure to dangerous
chemicals	chemicals such as cyanide and lime	chemicals
	Chemical spillages	Soil and water pollution
Extraction of ore	Failure to contain process solutions	Pollution of surface and goundwater and
through heap leach	within the heap leach circuit	soil.
process		Health impact on community and
		ecosystems
	Illegal access to heap leach	Injury or health impacts on community
Transportation of water	Potential overflow of water channel if	Potential soil and water pollution.
from heap leach and	channel becomes blocked with mud	
plant stormwater in lined	and ore from the heapleach	
water channel to		
emergency dam and		
pregnant pond		
Channelling of heap	Exposure to process solution	Death of animals through ingestion of
leach process solution		cyanide-bearing process solution
on open solution		
trenches		

7.3.3 Decommissioning phase

Table 25:	Decomm	issioning	impacts
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Activity	Aspect	Impact	
Topsoil	Replacing of soil leached of nutrients, soil	Soil compaction or erosion due to	
replacement and	erosion or compacted soil.	incorrect replacement and levelling of the	
re-vegetation of		topsoil will hinder vegetation regrowth.	
the area	Incorrect replacement and levelling of the	Potential soil compaction or soil erosion	
	topsoil	as a result of incorrect replacement and	
		levelling of the topsoil.	
	Inadequate placement of topsoil in slopes	Compacted soil may lead to the decrease	
	or the placement of topsoil creating a	of water infiltration therefore leading to	
	catena.	soil erosion.	

Activity	Aspect	Impact
		Soil erosion will occur if top-soil is not
		effectively managed through sloping and
		ensuring establishment of pioneer
		species to bind the soil.
		Invader plants are very common to occur
		once topsoil is replaced.
	Replacement of soil containing alien	Displacement of indigenous vegetation.
	vegetation	Change in plant species composition.
		Change in vegetation composition and
		structure.
		The spread of alien vegetation in areas
		previously free from such species
		causing a change in biodiversity
Wash down,	Inadequate cyanide decontamination	Contamination of soil, surface and
closure and		groundwater and potential health impacts
rehabilitation of		on the community and animal life
heap leach pads		
Loss of	At closure, employment will cease	Impact on local economic development.
employment		
opportunities		

7.3.4 Support services impacts

Table 26: Support services impacts

Activity	Aspect				Impact
Generation, storage and disposal of waste.	Potential disposal o	incorrect f waste.	storage	or	Surface water contamination through soil pollution may result if waste generated is not stored or disposed of correctly. Ground water contamination through soil pollution may result if waste generated is not stored or disposed of correctly. Littering or incorrect disposal of waste may also lead to a visual impact if not removed to the disposal facility. The illegal dumping or incorrect storage of waste may impact on the economy of the area in terms of property value.
	Potential	fire haza	ard due	to	The burning of waste can be a fire risk for

Activity	Aspect	Impact
	potential burning of waste	vegetation, animal life and employees.
	(incorrect disposal).	Smoke caused by a veld fire will cause air
		pollution.
Increase in human	Disturbance of vegetation due to	Any activities taking place outside of the
presence on Spanover	working outside designated mining	designated area may cause damage to
552 IO	area.	vegetation.
	Disruption of land capability due to	A veld fire will impact on the grazing
	making of fires, or accidental fires.	capacity or other agricultural potential of
		nearby areas.
	Disturbance of animal life due to	The fragmentation and destruction of
	loss of vegetation or directly due to	animal habitats may occur. A veld fire may
	making of fires, or accidental fires.	also have direct impact on animals.
	Air pollution due to making of fires,	Veld fires produce smoke which causes air
	or accidental fires.	pollution.
	Health effects from air pollution	Smoke from veld fires can be a health
	due to making of fires, or	hazard to persons in the area.
	accidental fires.	

7.3.5 Cumulative impacts

Table 27: Cumulative impacts

Activity	Aspect	Impact
Use of water in the Plant, at the		Contribution to the depletion of the
offices, workshops, wash bays	Use of water	natural resource in this water scarce
and surrounding farms.		area.
Mining operations,		Potential impact on air quality. According
transportation and surrounding	Dust generation	to the fall-out dust monitoring, dust levels
agricultural land use		are especially high during August to
		October, when dust storms occur.

7.4 Processes to be undertaken to ensure that impacts are mitigated

Mitigation measures need to be identified to ensure that impacts from the proposed activity are reduced as far as possible. The following mitigation measures objectives will be kept in mind while mitigation measures are identified:

- To find more environmentally sound ways of undertaking specific activities;
- To enhance any environmental and social benefits of a proposed activity;

- To avoid, minimise or remedy negative environmental impacts; and
- To ensure that any residual negative environmental impacts are environmentally acceptable.

Identifying appropriate mitigation measures will be conducted in a hierarchal manner:

- 1. Preventative measures will be identified to avoid, where possible, negative impacts that may arise as a result of the proposed activity;
- 2. Measures will be identified to minimise and/or reduce the negative impacts to "as low as practicable" levels; and
- Measures will be identified to compensate or remedy residual negative impacts that are unavoidable and cannot be minimised or reduced any further (Department of Environmental Affairs, 2006).

Proposed mitigation measures will be communicated to the applicant for review. The applicant will comment on the feasibility and practicality of implementing the mitigation measures. The mitigation measures may be adjusted based on the applicant's comments.

7.5 Specialist studies

The following specialist studies have been identified as part of the Environmental Impact Assessment phase of this project:

- Heritage Impact Assessment;
- Social Impact Assessment;
- Geohydrological study;
- Soil Survey;
- Biodiversity Assessment; and
- Noise Survey.

8. PLAN OF STUDY FOR EIA

In this part of the document a description is given of the steps to be taken as part of the Environmental Impact Assessment process. This section is written in accordance with Regulation 28 of R. 543 of the EIA Regulations of 18 June 2010.

8.1 Tasks to be undertaken as part of the EIA process

The Environmental Impact Assessment process will be conducted subsequent to the Scoping process and will be undertaken in accordance with the Regulation 31 of the EIA Regulations of 18 June 2010. The Environmental Impact Report (EIR) for the proposed project will include detailed information relating to the potential or anticipated impacts that may arise as a result of the proposed activity.

The EIR and draft EMP in accordance with NEMA (1998) and as per the EIA Regulations R.543 of 18 June 2010, will include, but is not limited, to the following:

- Details of the Environmental Assessment Practitioner (EAP);
- Expertise of the EAP to carry out an EIA;
- A detailed description of the proposed activity;
- A description of the property on which the activity is to be undertaken and the location of the activity on the property;
- A description of the environment that may be affected by the activity and the manner in which the physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity;
- Details of the public participation process followed;
- A description of the need and desirability of the proposed activity;
- A description of the identified alternatives to the proposed activity, including advantages and disadvantages that the proposed activity may have on the environment and the community that may be affected by the activity;
- An indication of the methodology used in determining the significance of potential environmental impacts;
- A description and comparative assessment of all alternatives identified during the environmental impact assessment process;
- A summary of the findings and recommendations of any specialist report or report on a specialised process (no specific requests have been received from the competent authorities to date);
- A description of all environmental issues that were identified during the environmental impact assessment process, an assessment of the significance of each issue and an indication of the extent to which the issue could be addressed by the adoption of mitigation measures;

- An assessment of each identified potentially significant impact, including cumulative impacts, the nature of the impact, the extent and duration of the impact, the probability of the impact occurring, the degree to which the impact can be reversed, the degree to which the impact may cause irreplaceable loss of resources, and the degree to which the impact can be mitigated;
- A description of any assumptions, uncertainties and gaps in knowledge;
- A reasoned opinion as to whether the activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;
- An environmental impact statement;
- A draft environmental management programme containing the aspects contemplated in regulation, including, but not limited to, environmental management objectives and goals, mitigation measures and management of significant impacts, a description of persons responsible for mitigation implementation, description of time periods applicable to mitigation implementation, and monitoring and performance assessment;
- Inclusion of technical and supporting information;
- Copies of any specialist reports and reports on specialised processes complying with regulation;
- Any specific information that may be required by the competent authority; and
- Any other matters required in terms of sections 24(4)(a) and (b) of the Act.

Compilation of the EIR and draft EMP will be conducted according to the EIA Regulations of 18 June 2010 (R.543) as per NEMA, 1998, and will include, but is not limited to, the following:

- The compilation of the EIR as stipulated in Regulation 31 of R.543 (18 June 2010), as per NEMA, 1998;
- The draft EIR and EMP will be submitted to the applicant for input prior to its submission for public and competent authority comment;
- Public Participation will be conducted in accordance with the EIA Regulations of 18 June 2010 (R.543). This will include submission of the draft EIR and EMP to the competent authority and the public in order to obtain their comments for a period of 40 days [R543(56)];
- All comments, objections and/or representations received during the Public Participation Process will be included and addressed in the final EIR and this document will be finalised;
- The final EIR and draft EMP will be submitted to the client to obtain their inputs;
- Registered Interested and Affected Parties will be given an opportunity to comment on the final EIR as stipulated in R543(56)(6). Their comments will be submitted directed to the competent authority and the EAP or applicant will be copied;
- The final EIR and draft EMP will be submitted to the competent authority for consideration. The competent authority will have 14 days to acknowledge receipt of the final EIR. Thereafter, the competent authority has 60 days to consider the report and in writing accept the report, reject the report, or ask for additional information or amendments to the document

[R.543(34)(2)]. Once the report has been accepted, the competent authority has 45 days to grant or refuse authorisation [R.543(35)(1)];

• Continued consultation with the relevant authority until issuing of the decision.

8.2 Stages at which the competent authority will be consulted

The stages, at which the competent authority will be consulted in the process of compiling the EIR and draft EMP as per the EIA Regulations R.543 (2010), will include amongst other, the following:

- During the Public Participation Process in accordance to EIA Regulations R.543 (2010), the draft EIR will be submitted to the competent authority for a period of 40 days to obtain their comments [R543 (56)];
- The final EIR will be submitted to the competent authority. They will have 60 days, after acknowledging receipt of the final EIR, to consider the report and in writing accept the report, reject the report or request additional information or amendments to the document [Regulation 543(34)(2)]; and
- Continued consultation with the competent authority until the decision is issued.

8.3 Methodology of assessing the environmental issues

Regulation 31 of R.543 of the EIA Regulations (2010), under the NEMA (1998), requires that an EIR includes an assessment of the status, extent, duration, probability, reversibility, replaceability of resources and mitigatory potential of the major potential environmental impacts of the proposed activity.

The environmental impact assessment will be conducted as specified in section 7.2.

8.4 Public participation during the EIA process

The compilation of the EIR and draft EMP as per R.543 will include, but is not limited to, the following public participation:

- The draft EIR and draft EMP will be provided to the client for review prior to public and competent authority comment;
- The Public Participation Process will be conducted in accordance with the EIA Regulations R.543 (2010). This will include submitting the draft EIR to the competent authority and public for a review period of 40 days [Regulation 543(56)];
- All comments, objections and/or representations received during the Public Participation Process will be included and addressed in the final EIR and this document will be finalised;
- The final EIR and draft EMP will be submitted to the client to obtain their inputs; and

• Registered Interested and Affected Parties (I&APs) will be given an opportunity to comment on the final EIR as stipulated in R.543(56)(6). Their comments will be submitted directed to the competent authority and the EAP or applicant will be copied.

8.5 Alternatives

Alternatives have and will continue to be investigated and the "No-Go Option" will be included in the assessment. The EIA document will discuss the alternatives identified and investigated for the proposed project as well as the advantages and disadvantages of each.

9. CONCLUSION

Potential environmental impacts include soil-, surface- and ground water- contamination, soil erosion, harm to a downstream river, loss of vegetation and nuisance due to noise and dust. Appropriate mitigation measures will assist in minimising the potential impacts on the surrounding environment during the construction and operational phases of the development. These will be identified during the Environmental Impact Assessment Phase of this project.

Based on the above-mentioned information and the identification of the potential environmental impacts as a result of the proposed expansion of the Harmony Kalgold mining operations through the optimisation project, it is concluded that a full Environmental Impact Assessment may commence.