THE ENVIRONMENTAL IMPACT ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PLAN FOR THE PROPOSED PLATREEF UNDERGROUND MINE

PLATREEF RESOURCES (PTY) LTD

JANUARY 2014

NEMA REF NO's:

PROJECT REF NO. 12/1/9/2-W32

NEAS REF NO. LIM/EIA/0000538/2013

NEMWA REF NO:

12/9/11/L1224/5

Digby Wells and Associates (South Africa) (Pty) Ltd (Subsidiary of Digby Wells & Associates (Pty) Ltd). Co. Reg. No. 2010/008577/07. Fern Isle, Section 10, 359 Pretoria Ave Randburg Private Bag X10046, Randburg, 2125, South Africa
Tel: +27 11 789 9495, Fax: +27 11 789 9498, info@digbywells.com, www.digbywells.com

Directors: A Sing*, AR Wilke, LF Koeslag, PD Tanner (British)*, AJ Reynolds (Chairman) (British)*, J Leaver*, GE Trusler (C.E.O)
*Non-Executive

This document has been prepared by Digby Wells Environmental.

Report Title: THE PROPOSED PLATREEF UNDERGROUND MINE EIA/EMP

Project Number: PLA1677

Name	Responsibility	Signature	Date
Casper Joubert	Report Writer		January 2014
Barbara Wessels	Report Reviewer		January 2014
Michael Hennessy	Report Reviewer		December 2013
Grant Beringer	Report Reviewer		December 2013

EXECUTIVE SUMMARY

Digby Wells Environmental (hereafter Digby Wells) has been appointed by Platreef Resources (Pty) Ltd (hereafter Platreef), as the independent Environmental Assessment Practitioner (EAP) to conduct an Environmental and Social Impact Assessment (ESIA) and associated specialist studies for the proposed Platreef Underground Mining Project (hereafter the Project). Platreef is investigating the construction and operation of an underground platinum mine on the farms of Turfspruit 241 KR; Macalacaskop 243 KR; and Rietfontein 2 KS (see Plan 1, Appendix A). The Project will be conducted in conformance with the framework provided in the World Bank Group (WBG), the International Finance Corporation (IFC) policies and guidelines for Environmental Assessment (EA) and the Equator Principles used for conformance with the IFC policies and guideline.

Furthermore, Platreef is currently following the necessary processes to obtain environmental authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) for associated listed activities as stipulated in the NEMA Regulations. In conjunction with the NEMA application, Platreef has submitted a Mining Right Application (MRA) in terms of the Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA). As part of this Project, Platreef also intends to apply for an Integrated Water Use Licence (IWUL) in terms of the National Water Act, 1998 (Act No. 36 of 1998) (NWA) and a Waste Management Licence (WML) in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEMWA).

This report is being prepared in support of the NEMA application to be submitted to the Limpopo Department of Economic Development and Environmental Tourism (LDEDET) and in support of the WML application to be submitted to the Department of Environmental Affairs (DEA).

Project Location and Description

The Project site is located approximately 8 km northwest of the town of Mokopane (previously known as Potgietersrus), which is situated in the magisterial district of the Mogalakwena Local Municipality and within the Waterberg District Municipality. Platreef plans to mine Platinum and other Platinum Group Metals (PGMs) such as Palladium (Pd); Rhodium (Rh); Iridium (Ir); Ruthenium (Ru); and Osmium (Os) with the Life of Mine (LoM) expected to be 30 years with the potential to extent this period by another 30 years.

An underground mine is planned and the Project aims to make use of the sublevel blast hole stoping method for mining the target Platinum Group Metals (PGMs).

Platreef which is a subsidiary of Ivanhoe Mines Limited (formerly Ivanplats Limited) holds exclusive prospecting rights for base and precious metals on the Turfspruit and Macalacaskop Farms. Platreef acquired a prospecting right for both Turfspruit and Macalacaskop farms in February 1998 and was granted a five-year Prospecting Right for Turfspruit and Macalacaskop in 2006 (Prospecting Right LP30/5/111/2/872PR). Platreef recently renewed the prospecting right, which now expires 31 May 2014. Platreef has

submitted a MRA in accordance with section 22 of the MPRDA to the Limpopo Region of the Department of Mineral Resources on 06 June 2013 (DMR Ref No. LP30/5/1/2/2/10067MR).

Prospecting on the Project site dates back to the 1960s, after which Rustenburg Platinum Holdings Limited (now a wholly-owned subsidiary of Anglo American Platinum Corporation) began exploration over the Platreef in the 1970s (AMEC, 2013).

The initial exploration focus was on the delineation of mineralisation amenable to open-pit mining. Ivanplats contracted a series of consultants to provide various studies involving concentrator/smelter options (Hatch in 2003), metallurgical test work (Mineral Development Services Ltd. in 2003), and conceptual mining studies, to assess reasonable prospects of developing an open-pit operation (African Minerals and AMEC in 2004). Mining cost assumptions were also updated to the end of 2006, and capital and operating costs were updated in 2007 to support the mineral resource assessments (AMEC, 2013).

In 2007, Platreef commenced a deep drilling program to investigate the continuity and grade in an area targeted as having underground mining potential. This resulted in a series of unpublished Mineral Resource estimates assuming underground mining methods and updates being prepared at various times between September 2010 and January 2011. A March 2011 resource update was published in September 2012 (AMEC, 2013).

According to the Technical Report on Updated Mineral Resource Estimate, work completed on the Project to date includes geological mapping, airborne and ground geophysical surveys, limited trenching, percussion drilling over the Platreef sub-crop, core drilling, petrography, density determinations, metallurgical test work, preliminary mineralogical studies, and Mineral Resource estimation. Preliminary mining and supporting studies have commenced (AMEC, 2013).

The Project is accessible all year round by the N11 national highway, and a developed rail network goes through Mokopane, the closest railhead to the Project.

A large, unskilled labour force lives in urban areas and farms around the Project area. Local town facilities and infrastructure exist to handle an influx of personnel.

The list of activities for which environmental authorisations in terms of NEMA and NEM:WA are required, are set out in Sections 3.2 (Table 3-1) and 3.3 (Table 3-2) of this report.

Purpose of this report

The overarching objectives of this EIA/EMP report are to:

- Prepare integrated sensitivity maps for the Project area based on the findings of environmental, socio-economic and cultural assessments as input into the Project design process;
- Identify and assess the significance of potential impacts associated with the all the listed activities in terms of NEMA and waste management activities in terms of NEM:WA (Table 3-1 and Table 3-2); and to

- Recommend mitigation and management measures to ensure that the development is undertaken in such a way as to promote the positive impacts and to minimise the negative impacts.

This report also describes the current environment of the Project area and evaluates all the impacts (Sections 9, 10 and 11) that have been identified during the specialist studies undertaken. Furthermore an Environmental Management plan has been developed (Sections 13.1, 13.2 and 13.3) to mitigate and manage all environmental impacts associated with each Project activity.

Specialist Studies conducted as part of this EIA Report

The following specialist studies have been conducted as part of this EIA/EMP report:

- Terrestrial Ecology Assessment;
- Topographical and Visual Assessment;
- Wetlands and Aquatic Assessments;
- Geohydrological (Groundwater) Assessment;
- Hydrological (Surface water) Assessment;
- Air Quality Assessment;
- Noise Assessment;
- Health Impact Assessment;
- Social-economic Impact Assessment; and
- Heritage Impact Assessment; and
- Traffic Impact Assessment.

Potential Impacts identified during the Various Specialist Studies

The table below is a summary of the significant environmental impacts that have been identified during the specialist studies conducted on the Project site:

Aspect	Impact Description
Topography	
Change in the Project surface area due to site clearing activities for the preparation of construction of infrastructure.	The removal of vegetation and topsoil will change the surface of the Project area and will therefore change the topography. The areas to be cleared include the infrastructure area, Tailings Storage Facility (TSF) Site 2 and the tailings pipeline servitude.
Change to topography due to construction of surface infrastructure.	The construction of surface infrastructure will add features to the topography thereby changing it.
Changes to the topography due to drilling,	The development of surface infrastructure will add

Aspect	Impact Description
blasting and development of infrastructure for mining.	features to the topography while drilling and blasting will create voids thus changing the topography.
Change in local topography due to the operation of surface infrastructure.	Operation of the stockpiles, waste rock dumps and the TSF will add to the surface and thereby change the topography of the Project area.
Visual	
Site clearing activities influencing the visual Environment.	The removal of topsoil and vegetation will have a negative visual impact on the receiving environment. Furthermore, the infrastructure (especially the TSF) will become noticeable to the surrounding receptors.
Construction of surface infrastructure influencing the visual environment.	The construction of the mine's surface infrastructure will have a negative visual impact on the receiving environment.
Drilling, blasting and development of infrastructure and shafts for mining will Influence the visual aspects of the project area.	The drilling, blasting (generation of dust) and development of infrastructure and shafts for mining will have a negative visual impact on the receiving environment.
Adding material to the waste rock dumps, stock piles and TSF.	Operation of the ore stockpile, waste rock dumps and TSF will have a negative visual impact on the receiving environment. This will be as a result of continuously adding material to these waste rock dumps and stockpiles.
Flora and Fauna	
Loss of Ridges, Bushveld and Impacted Ridge Bushveld Vegetation due to construction activities.	Mine construction activities will lead to the loss of Ridge Bushveld and impacted Ridge Bushveld vegetation thus impacting the biodiversity value of the areas affected.
Loss of Degraded Mixed Bushveld.	Mine construction activities will lead to the loss of Mixed Bushveld vegetation thus impacting the biodiversity value of the areas affected
Loss of general biodiversity.	The construction and operation of the mining infrastructure will lead to the potential loss of general biodiversity within the Project Area, thus decreasing the biodiversity value of the areas

Aspect	Impact Description
	affected.
Loss of flora and fauna Species of Special Concern.	The construction and operation of the mining infrastructure will lead to the potential loss of flora and fauna Species of Special Concern (SCC).
Influx of alien invasive species.	Construction , operation and decommissioning activities may cause the uncontrolled influx of alien invasive species within and around the Project area
Aquatic Impact Assessment	
Surface water run-off from mining activities.	Increased run-off due to large concrete terraces and roads and poor quality run-off from mining activities could impact the surface water quality.
Surface Water	
Surface water run-off	Refer to the impact described in the aquatics section above on surface water run-off.
Soil	
Soil compaction and topsoil loss due to erosion	Activities during early works, construction and operational phase in the Project area could lead compaction of soils and soil erosion.
Impact of site rehabilitation on soil and land capability	During the decommissioning activities, impacts to soil resources may include compaction and contamination which may be significant only in the short term.
Air Quality	
The crushing of ore	The crushing process releases fugitive dust, especially if there is no enclosure and are no water sprays.

The table below is a summary of the potential social impacts identified and anticipated for the Project:

Receiving Environment	Receiving Potential Impact description
Construction phase	Job creation during construction
	Multiplier effects on the local economy

Receiving Environment	Receiving Potential Impact description
	Economic empowerment of communities
	Skills transfer and development
	Community development induced by Local Economic Development (LED) and Corporate Social Initiatives (CSI) projects
	Economic displacement
	Disruption of movement patterns
	Construction-related health and safety impacts
	Visual/acoustic/vibration and air quality impacts
	Increase in spread of communicable diseases and social pathologies
	Conflict/competition between newcomers and incumbent population
	Increased pressure on local services/ resources
	Establishment and growth of informal settlements
	Opposition because of perceived negative impacts
Operational phase	Job creation during operation
	Regional economic development
	Dependency on mine for sustaining local economy
	Operation-related health and safety impacts
Decommissioning phase	Impacts on the work force
	Impacts on the local community
	Impacts on the wider community
	Job creation

The table below is a summary of the potential heritage impacts identified anticipated for the Project:

Receiving Environment	Potential Impact Description
Burial Ground / single graves	Immediate threats or risks include ground and vegetation clearance for the construction of infrastructure in the Operational Area. Potential sources of threats and risk include vandalism by workers

Receiving Environment	Potential Impact Description
	on site, accidental destruction or alteration of burial site by construction workers on site.
Isolated occurrences (Refer to Table 10-1)	The construction of the proposed mine infrastructure will destroy these sites known as isolated occurrences of heritage significance.

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