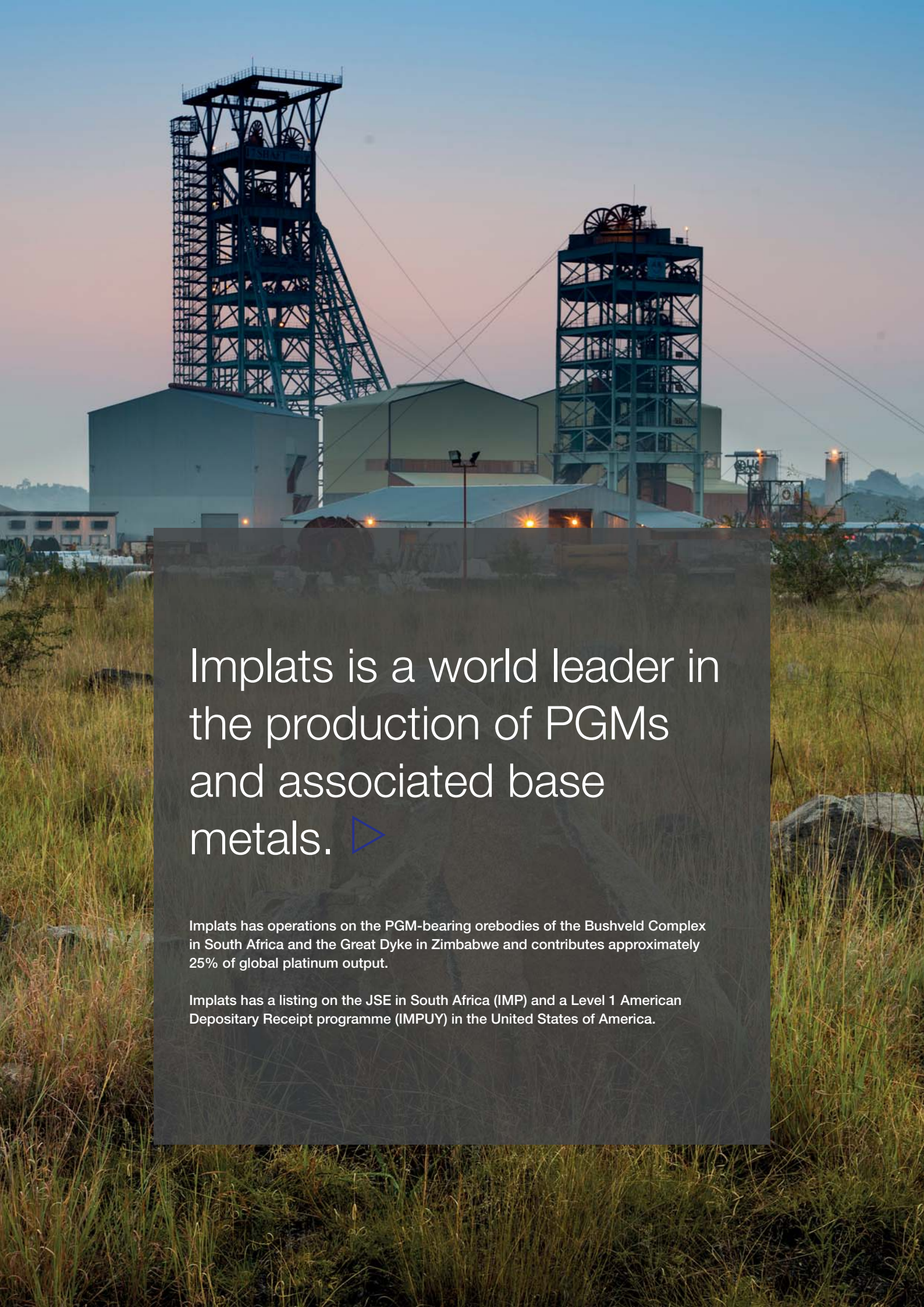



resources

IMPLATS
Distinctly Platinum

# Mineral resource and mineral reserve statement 2013



# Implats is a world leader in the production of PGMs and associated base metals.

Implats has operations on the PGM-bearing orebodies of the Bushveld Complex in South Africa and the Great Dyke in Zimbabwe and contributes approximately 25% of global platinum output.

Implats has a listing on the JSE in South Africa (IMP) and a Level 1 American Depositary Receipt programme (IMPUY) in the United States of America.

# Welcome to our 2013 mineral resource and mineral reserve report …

Additional information is provided in the following reports, all of which are available at **www.implats.co.za**


## integrated

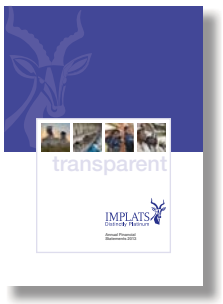
**Integrated annual report**

This was prepared in line with the recommendations of the South African Code of Corporate Practice and Conduct (King III), and draws on the guidance provided in the Discussion Paper, *Towards Integrated Reporting*, issued by the International Integrated Reporting Council (IIRC).


## sustainable

**Sustainable development report**

This has been developed in line with the recommendations of the G3 Sustainability Reporting Guidelines of the Global Reporting Initiative (GRI), and with consideration to the UN Global Compact.




## transparent

**Annual financial statements**

These were prepared according to International Financial Reporting Standards (IFRS), the requirements of the South African Companies Act, the regulations of the JSE and recommendations of King III

**Table of contents**

# Introduction

The Implats Group mineral resources and mineral reserves are reported herein; an abridged version is included in the Implats integrated annual report for 2013 which is available at **www.implats.co.za**.

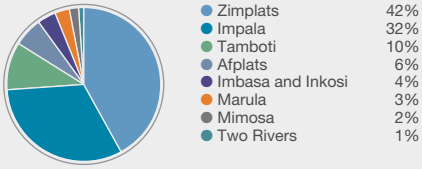
The main features relating to Implats' mineral resources as at 30 June 2013 relative to 30 June 2012 are:

- Estimated total attributable mineral resources increased marginally by 1Moz 4E to 425Moz; the total attributable platinum ounces remained constant at 230Moz
- Attributable mineral resources remain dominated by Zimplats and Impala. Some 44% of the attributable Implats mineral resources is hosted by the Great Dyke; the Zimplats mineral resources make up the bulk of these (42%)
- Year-on-year comparisons show a stable inventory, although additional work resulted in updated estimates in certain areas
- Steady progress is being made to convert mineral resources from the inferred category to an indicated and measured status. Altogether 56.7% of attributable mineral resources are in the indicated and measured categories, compared to 53.1% in 2012 and 51.4% in 2011.

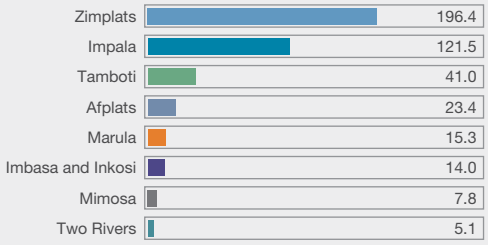
The main features relating to Implats' mineral reserves as at 30 June 2013 relative to 30 June 2012 are:

- Total attributable mineral reserves decreased by 1Moz 4E to 60Moz; the attributable platinum ounces decreased by 1Moz to 33Moz
- Mineral reserves are reasonably spread between the different reefs; the Merensky Reef contributes the smallest proportion of the Group attributable mineral reserves
- Some 59% of the attributable mineral reserves are located at Impala, where it is evenly spread between Merensky and UG2, however, the quantum of proved Merensky reserves remains low at some 20% below the same for the UG2 Reef
- The overall comparison does not show material differences over and beyond depletion, despite several movements at shaft level.

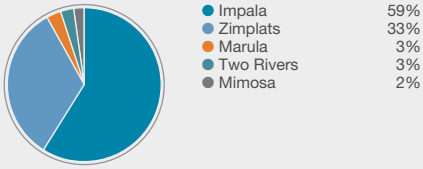
**Attributable mineral resources of 230Moz Pt**
as at 30 June 2013



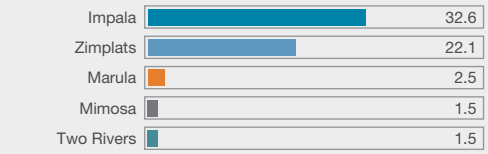

**Attributable mineral resources (Moz 4E) contribution by area**




**Attributable mineral reserves of 33Moz Pt**
at 30 June 2013




**Attributable mineral reserves (Moz 4E) contribution by area**



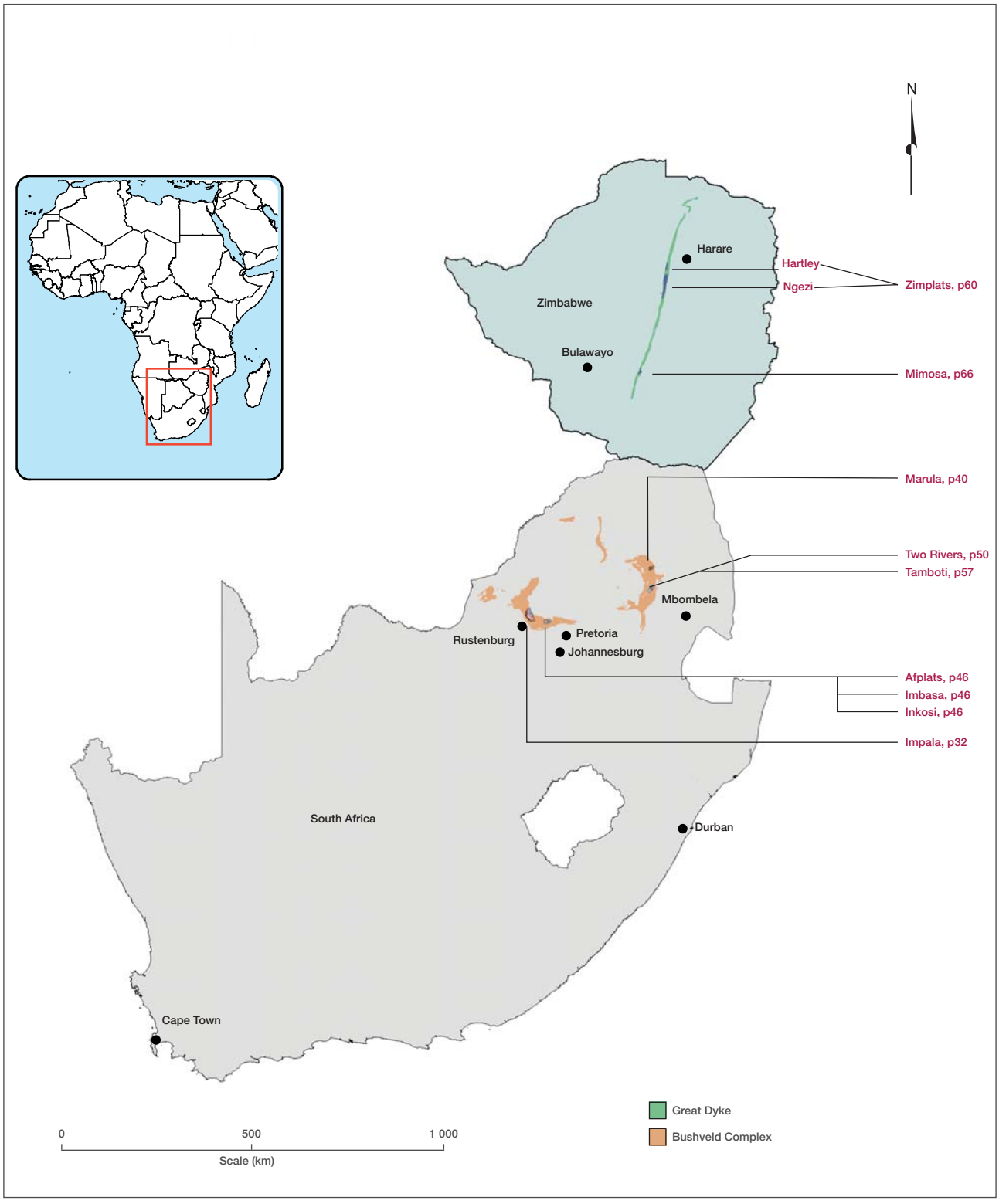

**Importantly it must be noted that as at 30 June 2013 the indigenisation transactions at both Mimosa and Zimplats have not been concluded. Once concluded Implats' mineral resources and mineral reserves may be significantly reduced.**

# Introduction ▷

**Implats exploits platiniferous horizons within the Bushveld Complex in South Africa and the Great Dyke in Zimbabwe.**

*Overland conveyor, Ngezi, Zimplats*

# Regional geological settings



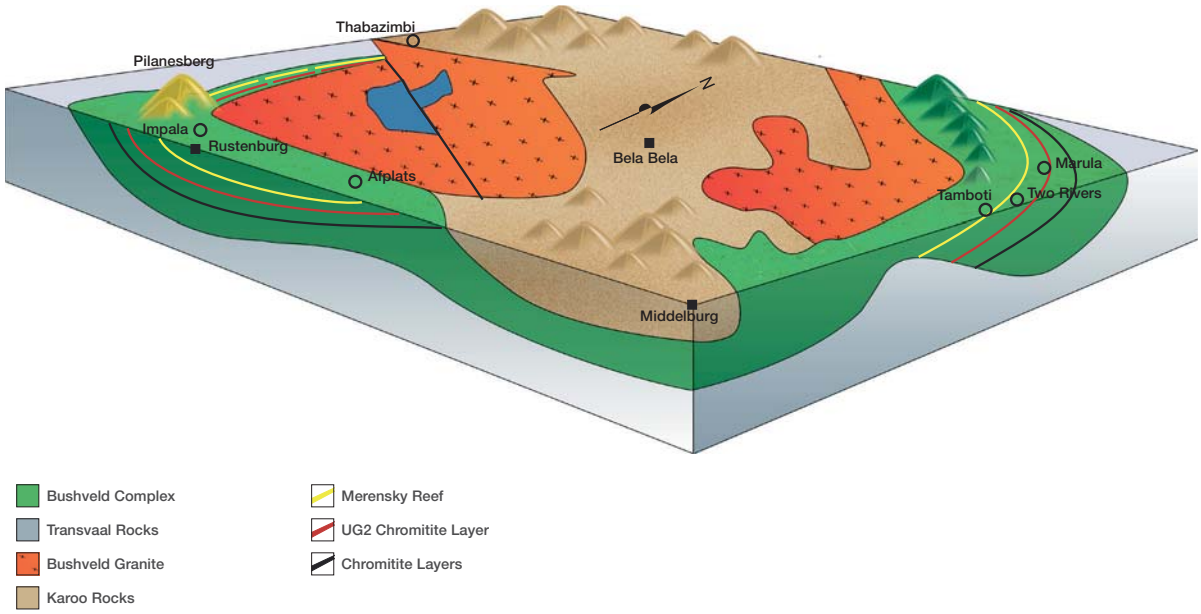
Implats exploits platiniferous horizons within the Bushveld Complex in South Africa and the Great Dyke in Zimbabwe. These two layered intrusions are unique in terms of size and geological continuity. Mining mostly takes place as underground operations focusing on relatively narrow mineralised horizons with specific mining methods adapted to suit the local geology and morphology of the mineralised horizons.

## The Bushveld Complex

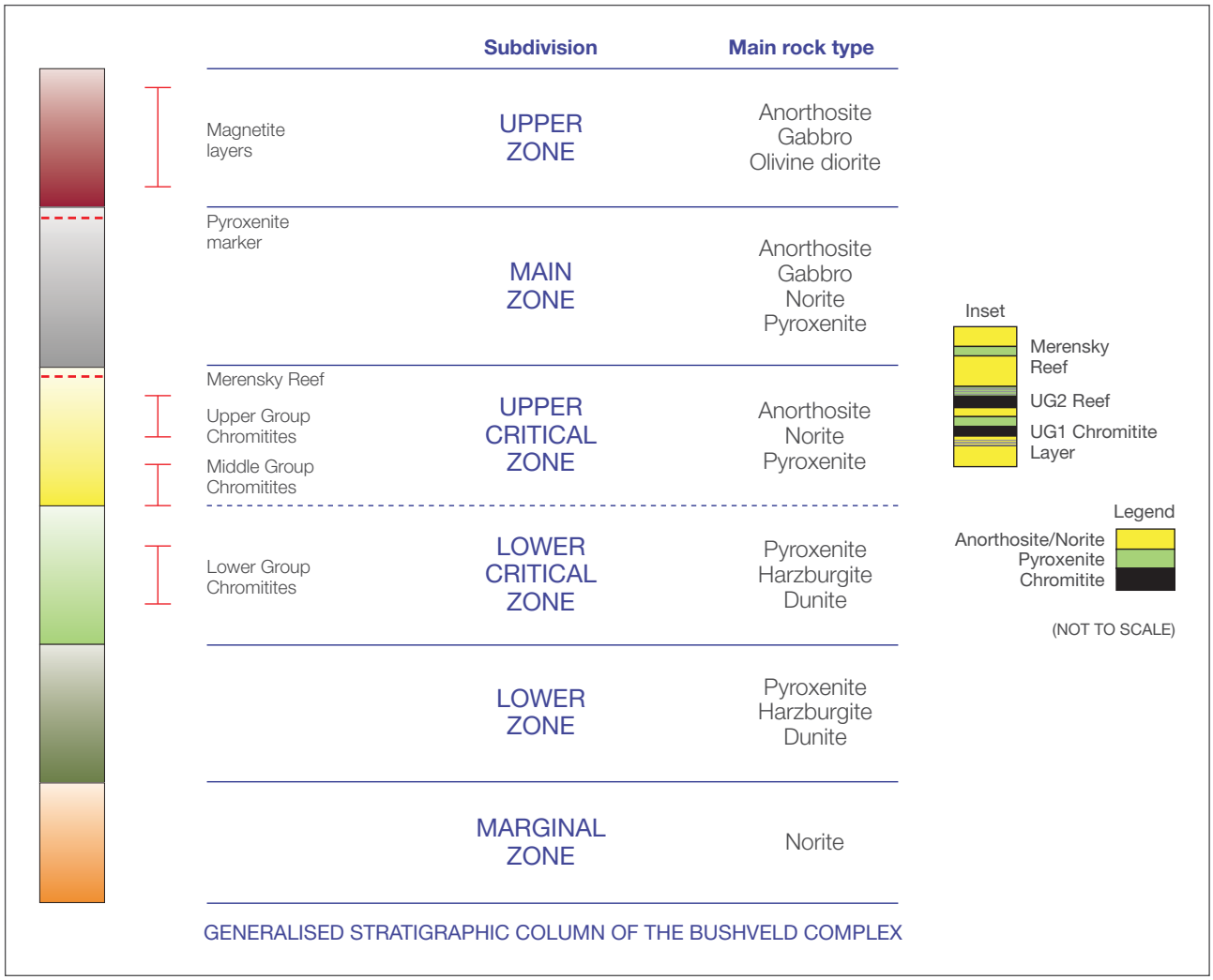
The Bushveld Complex is an extremely large (66 000km$^2$), two billion year-old layered igneous intrusion occurring in the northern part of South Africa. Rock types range in composition from ultramafic to felsic. The complex is not only unique in size, but also in the range and economic significance of its contained mineral wealth. In addition to the platinum group metals (PGMs) and associated base metals, vast quantities of chromite, vanadium and dimension stone are also produced.

The schematic diagram below shows the extent of the Bushveld Complex. The layered sequence, the Rustenburg Layered Suite, comprises five major subdivisions, ie the Marginal, Lower, Critical, Main and Upper zones. Two horizons within the Critical Zone, namely the Merensky Reef and the Upper Group 2 (UG2) Reef, host economically exploitable quantities of PGMs. These two horizons, along with other layers which can be traced for hundreds of kilometres around the complex, are the focus of Implats' operations. The PGMs – platinum, palladium, rhodium, ruthenium and iridium – as well as the associated gold, copper, nickel, cobalt, chromite and other minor metals and compounds, are mined and recovered.

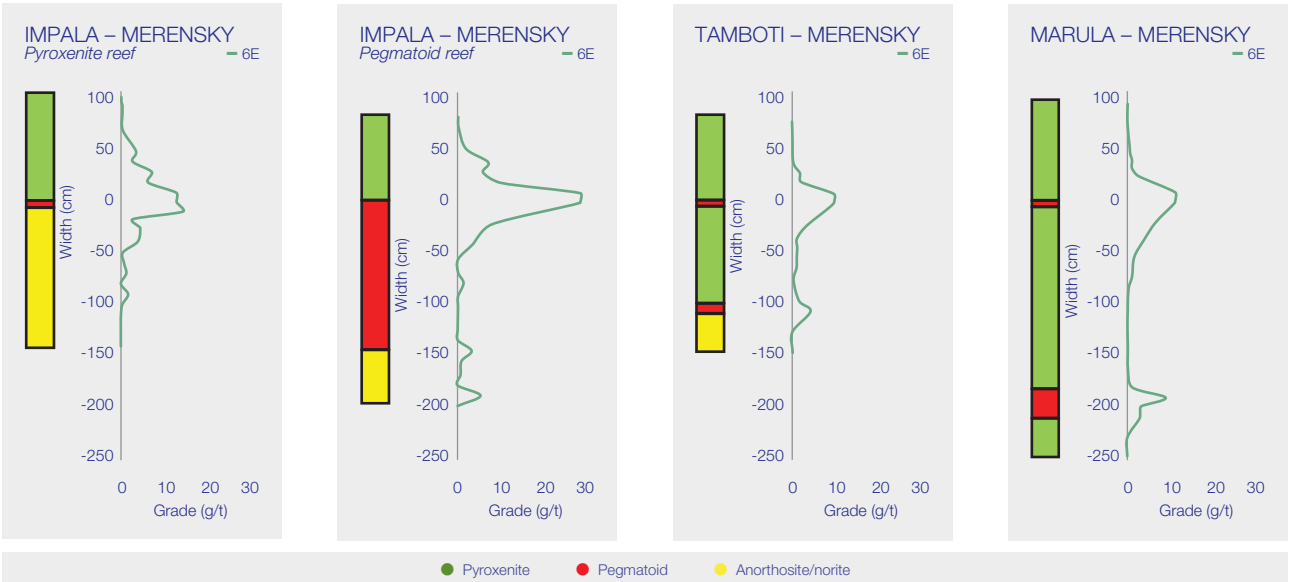
### The Bushveld Complex



# Regional geological settings continued



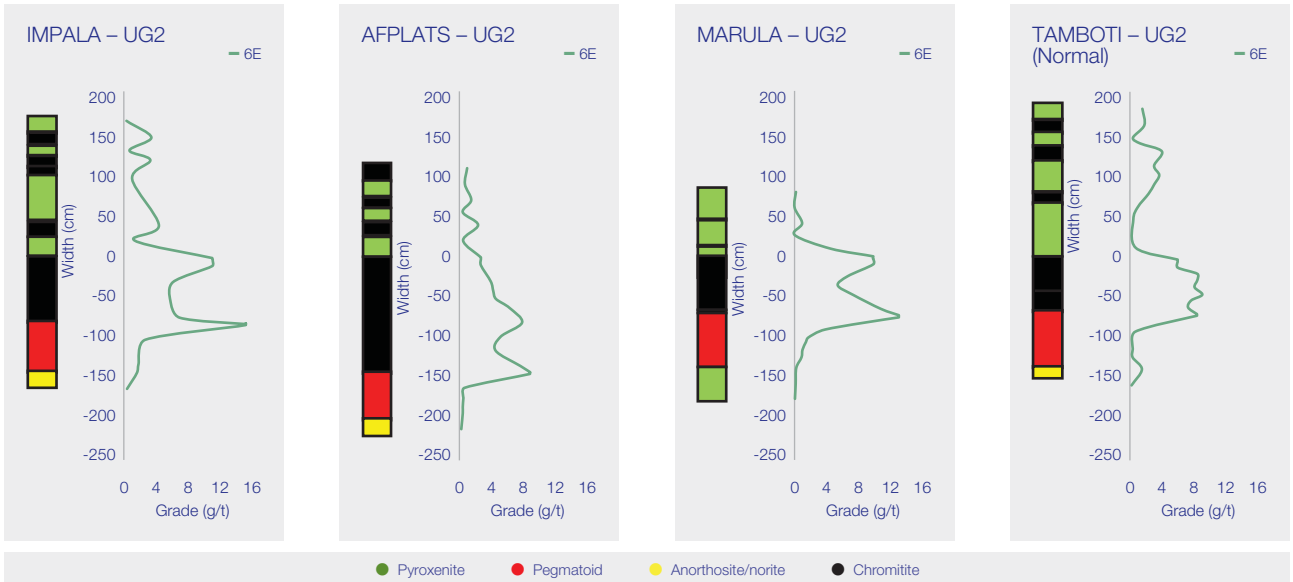

GENERALISED STRATIGRAPHIC COLUMN OF THE BUSHVELD COMPLEX



A detailed geological description of the various reef types is provided in the relevant operational sections. Examples of different Merensky Reef vertical grade profiles are shown on the previous page. It is clear that the grade distribution varies materially from area to area.

The UG2 Reef morphology and associated vertical grade distribution also differs significantly between regions (see below), specifically in terms of the width of the main chromitite layer and in the number of layers. In general the grade increases if the chromitite layer width becomes thinner. Implats' operations on the Bushveld Complex comprise Impala, located north of Rustenburg, and Marula, situated north-west of Burgersfort. The Two Rivers Mine, a joint venture between Implats and African Rainbow Minerals Limited (ARM), is located south-west of Burgersfort and the Tamboti Project is situated down-dip of the Two Rivers Mine. Afplats, with its Leeuwkop Project and the contiguous prospecting areas including Imbasa and Inkosi, is situated west of Brits.

*Mineral rights discussion*



# Regional geological settings continued

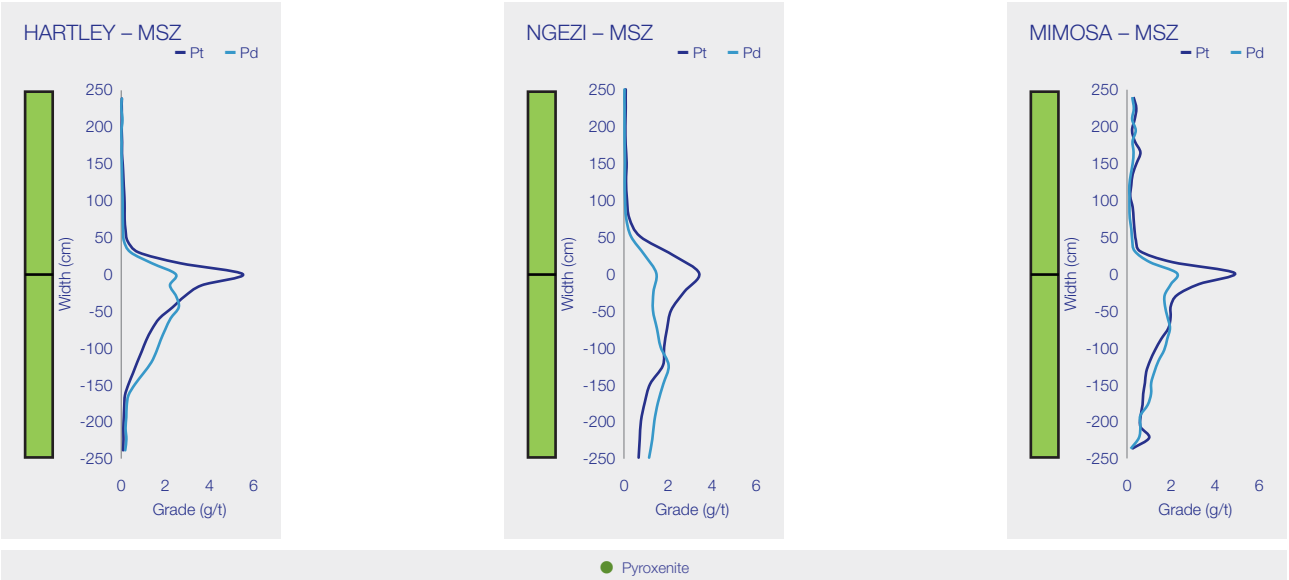
## The Great Dyke

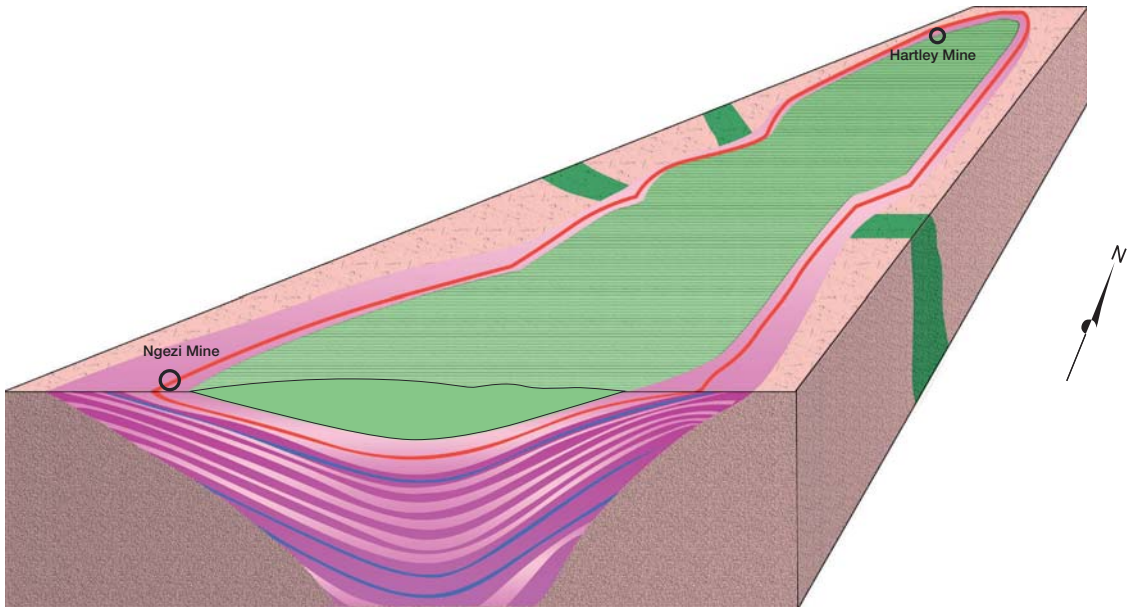
The Great Dyke is a long and narrow 2.5 billion year-old layered mafic-ultramafic body intruded into Archaean granites and greenstone belts. The Dyke is highly elongated, slightly sinuous, 550km long, north-northeast trending with a maximum width of 12km. The Great Dyke bisects Zimbabwe in a north-northeasterly trend and is divided vertically into a lower ultramafic sequence, comprising cyclic repetitions of dunite, harzburgite, pyroxenite and chromitite, and an upper mafic sequence consisting mainly of olivinegabbro, gabbronorite and norite. A diagrammatic section is shown opposite. It is U- to Y-shaped in sections with layers dipping and flattening towards the axis of the intrusion. Much of the mafic sequence has been removed by erosion and at the present plane of erosion the Dyke is exposed as a series of narrow, contiguous layered complexes or chambers. These are, from north to south, Musengezi, Hartley (comprising the Darwendele and Sebakwe sub-chambers) and a southern chamber comprising the Selukwe and Wedza sub-chambers.

The Main Sulphide Zone (MSZ), host to economically exploitable PGMs and associated base metal mineralisation, is located 10m to 50m below the ultramafic/mafic contact in the P1 pyroxenite. The PGMs along with gold, copper and nickel, occur in the MSZ.

A detailed description of the MSZ and the value distributions is provided in the relevant operations sections. The examples below comparing different areas indicate that the grade profiles vary between areas and that the platinum and palladium peaks are somewhat offset. Typically, the MSZ consists of a 2m to 10m-thick zone containing 2% to 8% of iron-nickel-copper sulphides disseminated in pyroxenite. The base of this nickel-copper-rich layer is straddled by a 1 to 5m-thick zone of elevated precious metals (Pt, Pd, Au and Rh). The base metal zone contains up to 5% sulphides, while the sulphide content of the PGM zone is less than 0.5%. This change in sulphide content is related to the metal distribution in a consistent manner and is used as a mining marker. It can normally be located visually in drill core and with careful observation it can also be located underground, therefore careful monitoring supported by channel sampling is required to guide mining.

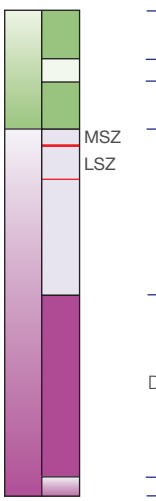
Chromitite layers present below the MSZ contain little to no PGM mineralisation and are mined by other operators for their chromite content only. Implats' operations on the Great Dyke comprise Zimplats' Ngezi Mine south-west of Harare and the Mimosa Mine, a joint venture between Implats and Aquarius Platinum Limited (Aquarius) situated east of Bulawayo.





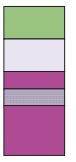

0 2.5 5
Scale (km)

- Great Dyke – Mafic, gabbronorites with local dolerite sills and xenoliths
- Great Dyke – Ultramafic, cyclic pyroxenite, harzburgite, dunite with chrome seams
- Greenstone rocks
- Granite
- Main Sulphide Zone




| Subdivision | | Main rock type |
|---|---|---|
| Upper Mafic | MAFIC SEQUENCE | Norite<br>Gabbronorite<br>Olivine Gabbro |
| Middle Mafic | | |
| Lower Mafic | | |
| Pyroxenite succession | ULTRAMAFIC SEQUENCE | Multiple cycles:<br>Pyroxenite<br>Harzburgite<br>Dunite<br>Chromitite |
| Dunite succession | | |
| Border Group | | |

Inset




Legend
Gabbronorite
Websterite
Orthopyroxenite
Pyroxenite + Sulphides

(NOT TO SCALE)

GENERALISED STRATIGRAPHIC COLUMN OF THE GREAT DYKE

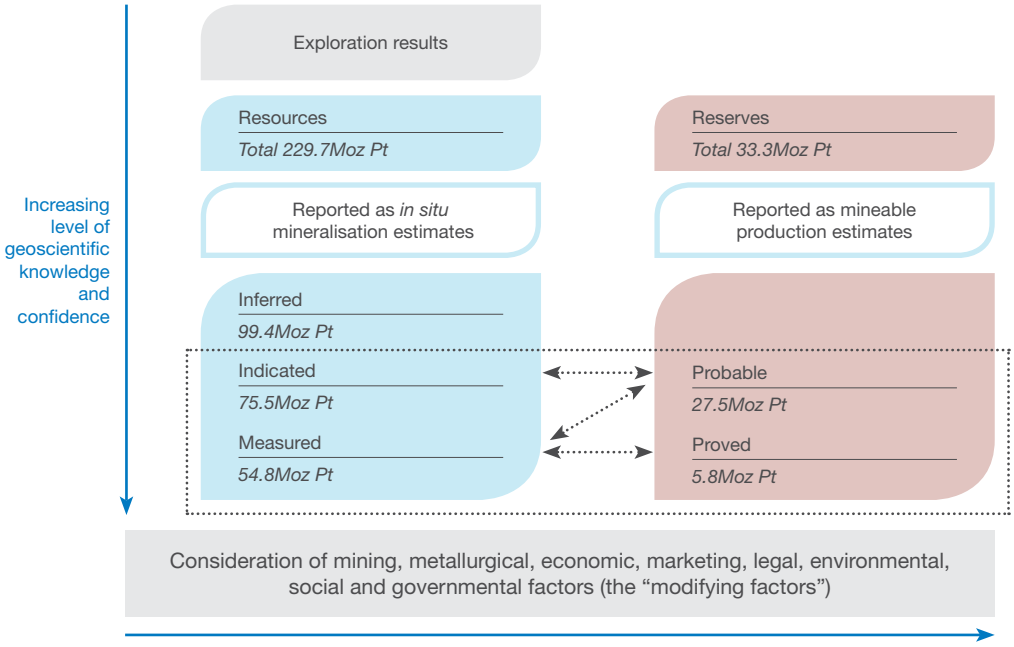
# Compliance

The reporting of mineral resources and mineral reserves for Implats' South African operations is done in accordance with the principles and guidelines of the *South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves* (SAMREC Code). SAMREC was established in 1998 and modelled its code on the *Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves* (JORC Code). The first version of the SAMREC Code was issued in March 2000 and adopted by JSE Limited (JSE) in its Listings Requirements later in the same year; this was similarly the basis for the JSE Ongoing Reporting Requirements which were promulgated in 2005. The SAMREC Code has been under review since 2004 and was updated in the 2007 edition and again amended in July 2009; the JSE subsequently incorporated this new version into its Listings and Reporting Requirements. Zimplats, as an Australian Securities Exchange (ASX) listed company, reports its mineral resources and ore reserves in accordance with the 2004 JORC Code. Mimosa Investments Limited, a Mauritius-based company, does not fall under any regulatory reporting code but has adopted the 2004 JORC Code for its reporting.

The definitions contained in the SAMREC Code are either identical to, or not materially different from, international definitions. International definitions for mineral resources and the indicated and measured mineral resource sub-categories, and the definitions for mineral reserves and the probable and proved mineral reserve sub-categories, are the same as those found in the SAMREC and JORC codes. The relationships between mineral resources and mineral reserves are depicted below in the standard SAMREC classification diagram. The Implats Group attributable platinum ounces are reflected in the illustration.

Various Competent Persons, as defined by the SAMREC and JORC codes, have contributed to the estimation and summary of the mineral resource and mineral reserve figures quoted in this report. As such, these statements reflect the estimates as compiled by teams of professional practitioners from the various operations, shafts and projects. Accordingly, the Group executive: mineral resource management, Seef Vermaak, PrSciNat SACNASP Registration No 400015/88, a full-time employee of Implats, assumes responsibility for the collation of the mineral resource and mineral reserve estimates for the Implats Group. (The Competent Person has 27 years' experience in the exploitation of PGM-bearing deposits.) In addition Gerhard Potgieter, Group executive: growth projects, and consulting mining engineer, PrEng, ECSA Registration No 20030236, a full-time employee of Implats, takes full responsibility for the mineral reserve estimates for the Group. (The Competent Person has 28 years' relevant mining experience.)

## Relationship between exploration results, mineral resources and mineral reserves showing Implats' attributable resources and reserves as at 30 June 2013



The following Competent Persons (CPs) are appointed in their field of expertise and responsibility:

| Competent Person's name | Appointment | Registration |
|---|---|---|
| Bennie Cilliers | Lead CP exploration | SACNASP, MGSSA |
| Louise Fouché | Lead CP geostatistics and databases | SACNASP, MGSSA, SAIMM |
| Johannes du Plessis | Lead CP audits, reconciliation | SACNASP, MGSSA |
| Emmanuel Acheampong | Lead CP mine planning | ECSA, SAIMM |
| Coenie Pretorius | Lead CP survey and ore accounting | PLATO, IMSSA |

| Unit/Project | CP mineral resources | Registration | CP ore reserves | Registration |
|---|---|---|---|---|
| Afplats and Imbasa/Inkosi | Jacolene de Klerk | SACNASP | n/a | |
| Marula | Jacolene de Klerk | SACNASP | Gerrie le Roux | PLATO |
| Tamboti | Bennie Cilliers | SACNASP | n/a | |
| Zimplats | Andrew du Toit<br>Sydney Simango | AusIMM<br>AusIMM | Simbarashe Goto | SAIMM |
| Impala Operations | David Sharpe | SACNASP | Emmanuel Acheampong | ECSA |
| Impala Exploration | Bennie Cilliers | SACNASP | n/a | |
| Two Rivers | Paul van der Merwe<br>Shepherd Kadzviti | SACNASP<br>SACNASP | Mike Cowell | SACNASP |
| Mimosa | Dumisani Mapundu | SACNASP | Dumisani Mapundu | SACNASP |

*Two Rivers, Mimosa and Zimplats CPs are appointed by their respective CEOs.*

In addition to the CPs listed above, the mineral reserve statements are fully supported by an experienced team of general managers, who sign off their respective business plans and take full responsibility for their mineral reserve statements. The general managers are:

| Name | Area of responsibility | Years' relevant experience |
|---|---|---|
| Charl Fryer | General manager Impala 1 Shaft | 20 |
| Terence Cowley | General manager Impala E/F Shaft | 30 |
| Bongi Ngqulunga | General manager Impala 4, 6, 7, 7A and 8 Shafts | 16 |
| André Fryer | General manager Impala 9 and 10 Shafts | 14 |
| Riaan Swanepoel | General manager Impala 11 Shaft | 23 |
| Zirk Fourie | General manager Impala 12 Shaft | 26 |
| Schalk Engelbrecht | General manager Impala 14 Shaft | 21 |
| Frikkie Höll | General manager Impala 16 Shaft | 33 |
| Jacey Kruger | General manager Impala 17 Shaft | 23 |
| Hans Fourie | General manager Impala 20 Shaft | 25 |
| Band Malunga | General manager Marula Mine | 20 |
| Alex Mushonhiwa | General manager Mimosa Mine | 20 |
| Adriaan de Beer | General manager Two Rivers Mine | 27 |
| Simbarashe Goto | General manager Ngezi Mine | 15 |

# Mineral rights status

The Mineral and Petroleum Resources Development Act, No 28 of 2002 (MPRDA), governing mineral legislation in South Africa, came into effect on 1 May 2004. The MPRDA, with its associated broad-based socio-economic empowerment charter for the mining industry and its attendant scorecard, as revised and amended from time to time, has played a significant role in the transformation of the South African mining industry. The Act effectively transferred ownership of privately held mineral rights to the State to enable any third party to apply to the Department of Mineral Resources (DMR) for new-order prospecting rights or mining rights over these previously privately held mineral rights. Implats continues to embrace the principles of transformation as a strategic imperative to reinforce its position as a leading southern African mining company, making the best possible use of available mineral resources.

**All old-order mineral rights held within Impala Platinum Holdings Limited (Implats) have been converted and secured in terms of the current legislative framework. There are no material impediments impacting the security of tenure of both the mining and prospecting rights held by Impala, Marula, Afplats and Two Rivers.**

The DMR's online application and reporting system, SAMRAD, which was launched on 18 April 2011, continues to face system functionality challenges, although the DMR has implemented an updated portal to rectify system shortcomings. It is still a challenge to verify if all Implats' existing mining and prospecting rights are correctly captured on SAMRAD. However, the DMR has reverted to its regional offices to accept applications lodged on SAMRAD and therefore the risk of acceptance of third-party applications by SAMRAD on existing rights has been removed. Although the new portal was expanded to accept section 11 transfer and section 102 amendment applications, the DMR acknowledge that these are not optimally functional on SAMRAD and therefore will still accept manual applications in this regard.

To mitigate the risk of third-party applications being accepted by the DMR regional offices, Implats continues to monitor DMR notices for possible acceptance of third-party applications that are in conflict with Implats' rights or pending applications. If conflicting applications are identified, Implats lodges the required appeals in terms of the MPRDA against these applications to prevent third-party conflicting rights being granted.

The Two Rivers conversion to a new-order converted mining right has been approved and execution thereof was completed during the year. Within Implats a number of prospecting right renewals have been submitted over the last few years in terms of the MPRDA framework. However, delays are being experienced in the approval and execution of these renewal applications, and Implats continues to work with the DMR to assist where possible to expedite the processes. During the year the prospecting right for the Diepkuil area, which is part of the Impala/ Royal Bafokeng Resources Joint Venture (RBR JV), was approved. A new prospecting right application in the Mpumalanga province was accepted during the year and is currently being processed by the DMR.

During the year Implats submitted several section 11 transfer and section 102 extension of existing mining right applications, relating to existing prospecting rights; adjacent to the Impala Rustenburg operation, the Afplats Leeuwkop operation and the Two Rivers operation. Furthermore, Marula also submitted a section 102 application to include the mining of the UG2 Reef into the existing Marula converted mining right in respect of a small part of Driekop, which is currently limited to the mining of the Merensky Reef only.

In 2011, Impala reached agreement with the Royal Bafokeng Platinum (RBPlat) to access certain of its mining areas at Bafokeng Rasimone Platinum Mine (BRPM) from 6, 8 and 20 shafts. This is essentially a royalty agreement which will provide mining flexibility to these shafts. The mineral resources and reserves involved are not reflected in this report as the ownership has not been transferred.

Fully permitted mining tenements are not specified by SAMREC as a prerequisite for the conversion of mineral resources to mineral reserves. However, Implats is cognisant of the fact that a reasonable expectation must exist that such mining rights will be obtained. We remain committed to South African legislative requirements to convert applicable prospecting rights to mining rights.

During the past two years, the DMR has focused on compliance audits to verify if the holder of rights complies with the terms and conditions under which the mining and prospecting rights were granted. To date, Implats maintains a good compliance record in terms of these DMR audits that verifies the security of tenure of its mining and prospecting rights.

The long-awaited MPRDA Amendment Act, No 49 of 2008, was enacted into law on 7 June 2013. Certain sections of the said Amendment Act did not come into

effect due to critical concerns raised by the mining industry in respect thereof. One concern was the amendment of section 102 not to allow for the extension of existing mining or prospecting right areas. However, as this amendment did not come into effect, these section 102 applications may continue to be processed.

In June 2013, the MPRDA Amendment Bill (B15-2013) was introduced into Parliament by the Minister of Mineral Resources, following the receipt of public comments made to the draft Mineral and Petroleum Resources Development Bill, 2012, that was published in December 2012. Implats noted with concern certain far-reaching amendments contained in the proposed draft Mineral and Petroleum Resources Development Bill, 2012, and submitted written representations to the DMR as part of the public representations. However, most of these concerns have not been addressed in the MPRDA Amendment Bill (B15-2013) which was subsequently introduced to Parliament in June 2013. Implats will continue to raise these matters in the parliamentary processes available before the Bill is enacted as an act. Implats also supports the concerns that are being raised through the Chamber of Mines in respect of the MPRDA Amendment Bill (B15-2013).

In Zimbabwe, Implats has engaged with the government in the quest for mutually acceptable implementation of the Indigenisation and Economic Empowerment Act and Regulations. Implats has agreed to achieve the required 51% local ownership in Zimplats and Mimosa through a combination of community trusts (10%), employee share ownership schemes (10%) and the sale of shares to broad-based indigenous entities (31%). The valuations and structures of the various trusts and transactions are the subject of ongoing negotiation. As at 30 June 2013, these transactions have not been concluded and the mineral resources and ore reserves continue to be reported as per the existing ownership. During the year, the Zimbabwean government gazetted its intention to compulsorily acquire a large tract of ground in the northern portion of the Zimplats mineral lease containing 54.6Moz Pt; Zimplats subsequently submitted an objection to this notice. The map in the Zimplats section shows the ground gazetted for acquisition.

The extent of the prospecting right, mining right and mining lease areas, both in South Africa and Zimbabwe, is listed below:

| South Africa | Mining right (ha) | Prospecting right (ha) | Implats' interest (%) |
|---|---|---|---|
| Impala | 29 745 | | 100 |
| Impala RBR JV* | | 3 789 | 49 |
| Afplats | 4 602 | 1 064 | 74 |
| Imbasa | | 1 673 | 60 |
| Inkosi | | 2 593 | 49 |
| Marula | 5 494 | 223 | 73 |
| Two Rivers | 2 296 | | 45 |
| Tamboti | | 8 524 | 100 |

** Prospecting joint venture with Royal Bafokeng Resources.*

| Zimbabwe | Mining leases (ha) | Implats' interest (%) |
|---|---|---|
| Zimplats | 48 535* | 87 |
| Mimosa | 6 591 | 50 |

** The area could be reduced to 23 600ha if the Zimplats objection to the Zimbabwean government's intention to compulsory acquire the northern section of the Zimplats' mineral lease is unsuccessful.*

# Exploration review

Given the present constrained economic situation, Implats has reviewed its exploration strategy. Overall expenditure is reduced with focus being limited to current operations.

## Bushveld Complex in South Africa

Exploration on and around the Impala mining area focused on infill drilling required to support the feasibility study at the 19 Shaft block. Drilling results were incorporated into the 3D seismics model to refine the detailed structural interpretation of this shaft block. Drilling was completed at 20 Lower Shaft block and commenced at 20 Shaft on the farm Boschkoppie as part of an agreement with RBPlats. Drilling of geotechnical boreholes in preparation for shaft sinking continued at 18 Shaft. Elsewhere at least one borehole was drilled on each of the RBR JV prospecting areas, comprising portions of the farms Doornspruit and Roodekraalspruit, and the farms Diepkuil and Klipgatkop. Drilling in support of ongoing mining operations was conducted at 11C Shaft and 14 Decline Shaft.

At Marula one borehole was drilled on the lower portion of an extension of the Driekop mining right as part of the agreement with the Anglo Platinum/ARM Joint Venture and three boreholes were completed on the Marula portion of the farm Hackney. One borehole was completed at Afplats on the Kareepoort/Wolvekraal extension. In the Imbasa/Inkosi area, drilling continued and an additional eight boreholes were completed. At the Tamboti Project eight boreholes were drilled on Portions 4, 5 and 6 of Kalkfontein in conjunction with Two Rivers and in fulfilment of prospecting right obligations.

## Great Dyke in Zimbabwe

Zimplats consolidated the exploration work completed in 2012 with a Competent Person's report on the resources north of Portal 10 by consultants, AMEC Mining and Metals Africa. This new mineral resource estimate incorporating the results of the latest drilling was compiled to prepare the way for a significant expansion into this northern area. The Zimbabwean government has, however, gazetted its intention to compulsorily acquire this ground and Zimplats subsequently submitted an objection to this notice.

At Mimosa further trenching was conducted to firm-up on the position of the sub-outcrop to the south of the Blore Shaft block. Assay results for boreholes drilled in the North Hill and South Hill areas for oxide ore evaluation in the previous year were received and have been incorporated in this year's mineral resource and ore reserves estimation.

## Offshore projects

Offshore exploration activity continued at a reduced level in line with the worldwide contraction of exploration funding and activity. Implats' main geographic focus was Canada where, in conjunction with Wallbridge Mining, HTX Minerals and Northern Shield Resources, Implats continued to explore for PGMs in the Sudbury Basin, the Mid Continental Rift area around Thunder Bay and the Labrador Trough respectively.

The Wallbridge/Implats Joint Venture confirmed the downdip extension of the Milnet 1 500m zone. HTX continued its evaluation of previously identified Mid Continental Rift type targets. Seven boreholes (1 567m) returned disappointing results. Three remaining targets will be tested in the first half of 2014. At Hele, a joint venture with HTX, six boreholes (1 403m) were drilled to test previously identified gravity, soil gas geochemistry and aeromagnetic targets. No significant mineralisation was intersected. In northern Labrador, Northern Shield carried out an extensive surface whole rock geochemistry programme using grab and sawn channel sampling. The work confirmed the presence of previously identified PGM mineralisation and resulted in several new PGM discoveries to extend the strike length at the Idefix property to 1 300m. Drill testing of this mineralisation is scheduled for the first quarter in 2014.

Elsewhere Implats maintained a watching brief on exploration developments worldwide and numerous exploration and potential mining opportunities were reviewed. A full review of the PGM exploration potential of Brazil was also concluded.

*Exploring at Idefix, Canada*

# Auditing and risk management

Implats is committed to independent third-party reviews of mineral resource and mineral/ore reserve estimates. Such reviews not only provide assurance but also assist with the principle of continuous improvement and are undertaken on a two-year cycle. AMEC Americas Limited (AMEC) completed Group-wide audits in 2010 and again in 2012. Both audits were done on Impala, Afplats, Marula and Zimplats with a specific scope of work for the respective areas. During the past year, SRK Consulting (South Africa) (Pty) Limited (SRK) was contracted to conduct a full review of the Impala mineral resources, business plan and mineral reserves, particularly in view of challenges facing the South African PGM industry, the lower production levels currently being achieved, as well as the reduced forecast for future years. The Mineral Corporation was appointed to conduct an independent Competent Person's estimate of the Tamboti mineral resources and AMEC in turn undertook an independent Competent Person's estimate for the Zimplats mineral resources north of the Portal 10 block at Zimplats.

SRK findings at Impala were as follows:

- There are some areas for suggested improvement in the estimation of resources. However, in SRK's opinion, none of the issues identified prevent the declaration of the resources as published and the estimation process meets the requirements of the SAMREC Code, and therefore SRK endorses the mineral resources as declared

> **The planning protocols employed by Implats have been developed in accordance with the SAMREC Code and satisfy or are more stringent than the requirements of the code. SRK suggests that the planning protocols be streamlined to align with operational requirements. It is SRK's opinion that the planning at Implats conforms with best practice**

- Operating costs are based on the historical performance of the shafts. SRK is of the view that the business is adequately capitalised and the capital estimates are a true reflection of the business needs. SRK believes the valuation of the LoM plan as presented is based on reasonable assumptions and inputs. The Triple Build-up shafts (16, 17 and 20 shafts) should continue to be developed as this will assist Impala to reduce unit costs
- The reserve estimate conforms with best-practice standards and the business plan is a good representation of what can be achieved
- SRK is of the opinion that the sign-off procedures for mineral reserves are sufficiently detailed and provide a satisfactory definition of individual responsibilities within the planning process to meet the SAMREC requirements. The LoM plan has been reviewed and signed off by each discipline

> **SRK believes the process followed for the conversion of mineral resources to mineral reserves meets the requirements of the SAMREC Code and endorses the resources and reserves as published.**

The work by SRK provides assurance to the Implats board regarding the mineral resource estimates, the planning processes and assumptions, the business plan and the LoM outlook for the Impala mining right area.

Tomahee Consulting was also contracted in February to conduct a high-level review of the planning process, input parameters and accuracy of the 2014 business plan at Impala. They concluded that geological models, modifying factors and planning calculations were correctly applied. Concerns were raised *inter alia* about the level of detail in planning parameters and timing of the business plan cycle. This prompted a detailed scrutiny and replanning process that was based on updated mine plans, geological models, detailed half-level productivities, available face length and crew deployment. The outcome of this was increased confidence and assurance in the business plan that informs the mineral reserve statement.

AMEC was commissioned to analyse the 2012 drilling results from the area north of Portal 10 at Zimplats, to update the mineral resource estimate and produce a supporting Competent Person's report (CPR). Although the tonnage and grade changed due to newly acquired data, the contained metal was within 5% of previous estimates. In March 2013, the Zimbabwean government issued notice of its intention to compulsorily acquire this mineral right. Zimplats submitted an objection and as at 30 June the transaction has not been completed. This area contains 54.6Moz platinum.

# Auditing and risk management continued

Given the termination of the agreement with Kameni regarding the Impala Tamboti prospecting right area, The Mineral Corporation was commissioned to assess all the data, to update the resource estimate and to produce an independent CPR. Impala has not revised the mineral resource estimate for the past three years and the previous estimate was based on limited information. The updated report by The Mineral Corporation highlighted a material change from the previous estimate with a 14% reduction in the contained platinum content due to the additional information and latest models.

The mineral resources department subscribes to a formal risk management system and endeavours to systematically reduce all risks relevant to the mineral resources and reserves. Presently no area of risk is considered significant post the current controls. It is recognised by Implats that mineral resource and mineral reserve estimations are based on projections which may vary as new information becomes available or specifically if assumptions, modifying factors and market conditions change materially. This approach is consistent with Group definitions of risk as per ISO 31000:2009, "The effect of uncertainty on objectives". The assumptions, modifying factors and market conditions therefore represent areas of potential risk. In addition, security of mineral right tenure or corporate activity could have a material impact on the future mineral asset inventory.

# Relevant assessment and reporting criteria

The following key assumptions and parameters, unless otherwise stated, were used in the compilation of the estimates in this declaration:

- Implats developed a Group-wide protocol for the estimation, classification and reporting of mineral resources and mineral reserves in 2010 to enhance standardisation and to facilitate consistency in auditing. This protocol is updated annually with the aim to improve and specifically guide the classification of mineral resources and to ensure compliance with the SAMREC Code
- Implats introduced a depth cut-off in 2010 whereby mineralisation below a certain depth is excluded from the mineral resource estimate. This cut-off depth is applicable to the Bushveld Complex setting and is reviewed annually considering a range of assumptions, specifically the virgin rock temperature (VRT), cooling requirements, available technology, support design and other cost, prices and mining depth limits presently in the platinum industry. It is recognised that while the actual cut-off depth could vary from area to area and over time as conditions vary; a constant depth is assumed for all operations at present. The depth cut-off of 2 350m is applied to the 2013 Implats mineral resource estimates. This equates approximately to a VRT of 73°C
- Mineral resource tonnage and grades are estimated *in situ*. The mineral resources for the Merensky Reef are estimated at a minimum mining width, and may therefore include mineralisation below the selected cut-off grade. Mineral resource estimates for the UG2 Reef reflect the main UG2 chromitite layer widths only and do not include any dilution. Implats prefers to estimate the UG2 chromitite layer separate to the low-grade or barren hangingwall and footwall units as this approach supports improved grade control and ore accounting practices. This practice to report the UG2 chromitite layer as the mineral resource estimated and disclosing the actual estimated layer width is most transparent and compliant with the SAMREC Code
- Note that the main UG2 chromitite layer widths in the case of Impala and Marula are narrower than a practical minimum mining width. For further clarity a comparative summary is listed in these sections where the standard estimates are compared with estimates that include dilution up to a minimum mining width
- Mineral resource estimates for the Main Sulphide Zone are based on optimal mining widths
- Mineral resource estimates are reported inclusive of mineral reserves, unless otherwise stated
- Mineral resource estimates allow for estimated geological losses but not for anticipated pillar losses during eventual mining, except where these pillars will never be extracted, such as legal, boundary and shaft pillars

- ▷ Mineral reserve estimates include allowances for mining dilution and are reported as tonnage and grade delivered to the mill
- ▷ Rounding-off of figures in the accompanying summary estimates may result in minor computational discrepancies. Where this occurs it is not deemed significant
- ▷ It is important to note that the mineral resource statements in principle remain imprecise estimates and cannot be referred to as calculations. All inferred mineral resources should be read as "approximations"
- ▷ Exploration samples are mainly assayed for all PGEs and Au, using the nickel sulphide fire assay collection method and determining the elements with a conductively coupled plasma mass spectrometer (ICP-MS). This is undertaken at Intertek Genalysis in Kempton Park. Intertek Genalysis also determines the base metal content with an atomic absorption (AA) spectrometer in Perth after partial digestion in order to state metal in sulphide that is amenable to recovery by flotation processes
- ▷ Underground samples are mainly assayed for Pt, Pd, Rh and Au using the lead collection method by the in-house laboratories at the respective mines. A partial digestion at the in-house laboratories is used to determine the base metal content of samples using AA
- ▷ Density determinations are done at the respective laboratories using gas pychnometer technology and/or in the field using the gravimetric method
- ▷ All references to tonnage are to the metric unit
- ▷ All references to ounces (oz) are troy with the factor used being 31.10348 metric grams per ounce
- ▷ The mineral resources and mineral reserves reported for the individual operations and projects are reflected as the total estimate (100%). The corresponding estimates relating to attributable mineral resources and mineral reserves are only given as combined summary tabulations
- ▷ Mineral reserves are that portion of the mineral resource which technical and economic studies have demonstrated can justify extraction at the time of disclosure. Historically, Implats has only converted mineral resources to mineral reserves on completion of a full feasibility study. The exception to this has been at Zimplats where the basis of a pre-feasibility study was applied, as permitted by the JORC Code. This practice is in line with the SAMREC 2009 clarification that only a pre-feasibility study is required for such conversions
- ▷ There are only limited changes in the estimation principles and reporting style as at 30 June 2013 relative to the previous report. The key changes are:
  - The stoping width for the UG2 Reef at Impala has increased by some 7% due to the impact of newly implemented stoping support standards. Impala has implemented the use of bolting and netting for the UG2 Reef. The increase is to cater for the expected impact as the rollout gains momentum. While every effort will be made to control stoping widths, the full impact will only be known in a year's time as implementation nears completion
  - The mineral resource estimates for the UG2 Reef at Impala and Marula have been expanded to include a comparison with a minimum mining cut. While Impala believes that the resource on the UG2 should only include the UG2 Reef channel, the impact of the dilution of the mining cut is shown for completeness to illustrate the effect on the grade. No content is lost in this calculation
  - The individual operations reports have been expanded to show the local geographic and mineral rights setting. This allows the reader to contextualise the operations
  - Specific changes relating to the individual operations or projects are clarified under each operational sub-section
- ▷ The term ore reserve is interchangeable with the term mineral reserve
- ▷ Implats uses a discounted cash flow model that embodies economic, financial and production statistics in the valuation of mineral assets. Forecasts of key inputs are:
  - Relative rates of inflation in South Africa and the United States
  - Rand/dollar exchange rate
  - Metal prices
  - Capital expenditure
  - Operating expenditure
  - Production profile
  - Metal recoveries.

The outputs are net present value, the internal rate of return, annual free cash flow, project payback period and funding requirements. Metal price and exchange rate forecasts are regularly updated by the marketing department of Implats. As at 30 June 2013, a real long-term forecast for revenue per platinum ounce sold of R28 718 was used (c.f. R25 211 for 2012). Specific real long-term forecasts include:

- ▷ Platinum US$2 017/oz
- ▷ Palladium US$1 156/oz
- ▷ Rhodium US$1 728/oz
- ▷ Nickel US$18 115/oz
- ▷ Exchange rate R9.31/US$.

# Integrated mineral resource management

Implats embraces an integrated mineral resources management (MRM) function. To this end, systems, procedures and practices are aligned and are continuously being improved to achieve this objective. MRM includes exploration, geology, geostatistical modelling, mine survey, sampling, mine planning and the MRM information systems. The MRM function is the custodian of the mineral assets and specifically strives to grow these assets in terms of both resources and reserves, and to unlock value through a constant search for optimal extraction plans which yield returns in line with the corporate and business objectives.

**The main objective of the MRM function is to add value to the organisation, through:**

- **Ensuring that safe production is the first principle underpinning all mineral reserve estimates**
- **Appropriate investigation, study and understanding of the orebodies**
- **Accurate and reconcilable mineral resource and mineral reserve estimates**
- **Integrated and credible short-, medium- and long-term plans**
- **Measured and managed outputs**
- **Sound management information systems.**

Continuous improvement has been embedded in the MRM function. Specific focus is given to standardisation, development, review and improvement of protocols to govern MRM. Implats accordingly remains committed to the following:

- Continuously improving the management of mineral resources and related processes, while addressing skills development and retention
- Optimal exploitation of current assets, together with growth of the mineral resource base by leveraging and optimising existing Implats properties, exploration and acquisitions, including alliances and equity interests with third parties
- The legislative regime that governs mineral rights ownership
- The transparent, responsible and compliant disclosure of mineral resources and mineral reserves in line with the relevant prescribed codes, SAMREC and JORC, giving due cognisance to materiality and competency.

Present focus areas include:

- Improving the MRM information systems in cooperation with third-party vendors
- Establishing strategic mine planning work processes and capacity
- Revisiting the planning cycle
- Improved mineable face length, the prediction and management controls
- Improvement in the Impala head grade
- Active involvement in capital projects to ensure optimal extraction in future.

*Section valuator, 14 Shaft*

# Mine planning

The main objectives of the Implats integrated planning cycle has remained as follows:

- ▷ To utilise the full available time per year for quality planning
- ▷ To allow integration of the different levels of planning
- ▷ To ensure the planning levels are done in the correct sequence
- ▷ To populate the cycle with appropriate review processes
- ▷ To link the planning cycle to business reporting periods
- ▷ To provide continuity of plans and cycles
- ▷ To place emphasis on risk and value
- ▷ To identify departmental inputs and ensure full participation
- ▷ To ensure changes in the business environment are continuously incorporated
- ▷ To ensure top-down goals flow through to operational planning and *vice versa*
- ▷ To ensure optimisation of plans
- ▷ To enhance compliance with standards, consolidation and delivery of results.

The planning cycle is under constant review to further optimise the process. Consideration is given to the sequence of planning, the duration of the business planning period and the embedding of long-term strategic planning.

Implats has defined three levels of life-of-mine (LoM) planning, these being classified as Levels III, II and I, shown adjacent, which also illustrates a broad alignment with resource and reserve categories. The three levels are linked to increasing levels of confidence and the conversion of mineral resources to mineral reserves.

**LoM Level III** includes "Blue Sky" and scoping studies, and therefore focuses mainly on inferred resources and exploration results. It also includes contiguous areas and opportunities outside existing lease boundaries and ownership. Clearly, valuation on these resources can only be done internally, for the purpose of justifying expenditure for the upgrading of the inferred resources.

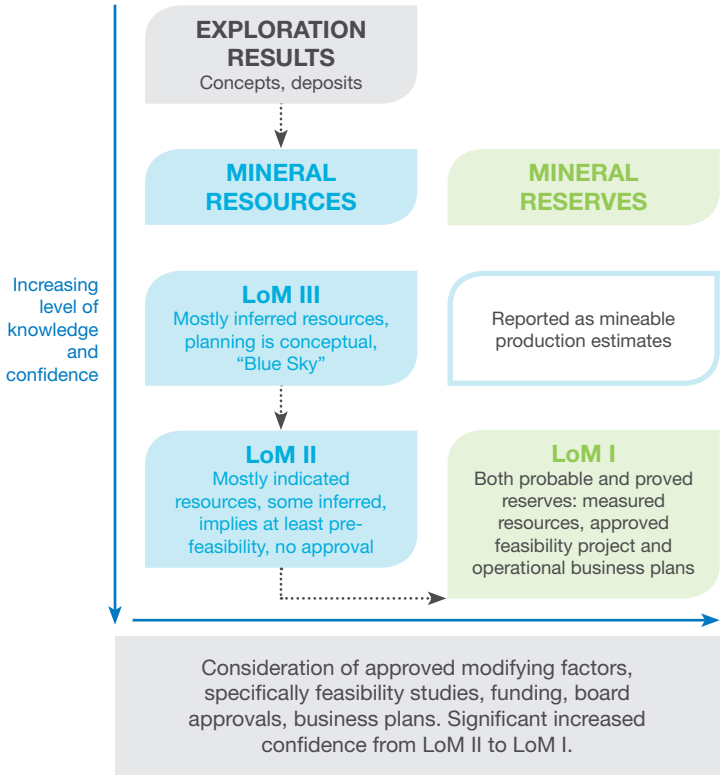
**LoM Level II** includes planned but as yet unapproved projects, which have a reasonable chance of future board approval.

**LoM Level I** includes operational shafts and approved capital projects where a portion of mineral resources is converted to mineral reserves and sufficient confidence exists for the declaration of mineral reserves in a public report. Implats complies with the SAMREC requirement for a pre-feasibility study to define mineral reserves by insisting that a feasibility study and approved capital define mineral reserves.

Estimation of grade block models is facilitated by geostatistical packages such as Isatis™ and Datamine™ and is based on a fit-for-purpose principle. Mine design and scheduling utilise 3D planning tools; the output of which supports the mineral reserve estimates. Grade and tonnage modifying factors are stored in electronic databases. Where there is no history, factors from similar operations are used as a guideline. Planning parameters are informed by recent performance per half level rather than long-term performances.

At Impala, the mine managers and general managers oversee the compilation and sign off their respective shafts' production profiles. These profiles are further endorsed by the executive: mining and the Group planning manager. In addition, graphical plans depicting the planned layouts, design and sequence of mining are interrogated and signed off by the mine manager, mine planner, geologist, surveyor, rock engineer and ventilation officer of each shaft. Minor variations of this sign-off protocol are used at other Group operations but work is ongoing to standardise the procedure across the Group.

## High-level classification of life-of-mine plans



# Attributable mineral resources and mineral reserves

Implats reports a summary of total attributable platinum ounces as sourced from all categories of mineral resources of the Implats Group of companies and its other strategic interests on a percentage equity interest basis. The tabulation below reflects estimates for platinum, palladium, rhodium and gold (4E), based on the percentage equity interest. For clarity, both attributable mineral resources, inclusive of mineral reserves, and attributable mineral reserves are shown separately. Note that these are not in addition to each other. These are summary estimates and inaccuracy is derived from rounding of numbers. Where this happens it is not deemed significant.

## Attributable mineral resources inclusive of mineral reserves

as at 30 June 2013

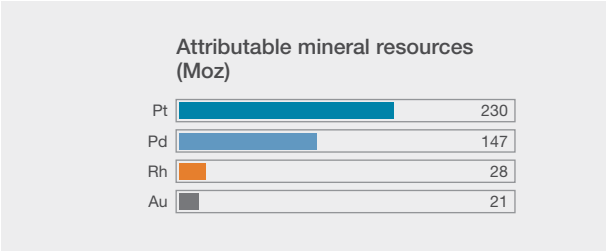
| | | | | 4E | 6E | | Moz | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Orebody | Category | Tonnes Mt | grade g/t | grade g/t | % share | Pt | Pd | Rh | Au | 4E |
| **Impala** | Merensky | Measured | 145.8 | 6.62 | 7.39 | 100 | 19.6 | 8.6 | 1.62 | 1.20 | 31.0 |
| | | Indicated | 84.8 | 6.29 | 7.03 | 100 | 10.8 | 4.7 | 0.89 | 0.66 | 17.2 |
| | | Inferred | 68.4 | 5.50 | 6.14 | 100 | 7.6 | 3.3 | 0.63 | 0.47 | 12.1 |
| | UG2 | Measured | 134.1 | 7.31 | 8.76 | 100 | 18.3 | 9.7 | 3.31 | 0.26 | 31.5 |
| | | Indicated | 68.1 | 7.26 | 8.71 | 100 | 9.2 | 4.9 | 1.67 | 0.13 | 15.9 |
| | | Inferred | 34.1 | 7.44 | 8.92 | 100 | 4.7 | 2.5 | 0.86 | 0.07 | 8.2 |
| | **Total Impala** | | **535.3** | **6.73** | **7.78** | | **70.3** | **33.7** | **8.97** | **2.80** | **115.8** |
| **Impala/ RBR JV** | Merensky | Measured | 2.6 | 6.39 | 7.13 | 49 | 0.3 | 0.1 | 0.03 | 0.02 | 0.5 |
| | | Indicated | 4.1 | 6.97 | 7.78 | 49 | 0.6 | 0.3 | 0.05 | 0.04 | 0.9 |
| | | Inferred | 13.9 | 5.64 | 6.30 | 49 | 1.6 | 0.7 | 0.13 | 0.10 | 2.5 |
| | UG2 | Measured | 0.8 | 7.45 | 8.94 | 49 | 0.1 | 0.1 | 0.02 | 0.00 | 0.2 |
| | | Indicated | 1.6 | 7.85 | 9.41 | 49 | 0.2 | 0.1 | 0.04 | 0.00 | 0.4 |
| | | Inferred | 4.7 | 7.49 | 8.99 | 49 | 0.7 | 0.3 | 0.12 | 0.01 | 1.1 |
| | **Total JV** | | **27.6** | **6.40** | **7.31** | | **3.5** | **1.6** | **0.39** | **0.17** | **5.7** |
| | **Total** | | **562.9** | **6.71** | **7.76** | | **73.9** | **35.3** | **9.36** | **2.97** | **121.5** |
| **Marula** | Merensky | Measured | 25.0 | 4.24 | 4.55 | 73 | 2.0 | 1.1 | 0.10 | 0.26 | 3.4 |
| | | Indicated | 5.6 | 4.26 | 4.54 | 73 | 0.4 | 0.2 | 0.02 | 0.06 | 0.8 |
| | | Inferred | 7.2 | 4.16 | 4.46 | 73 | 0.6 | 0.3 | 0.03 | 0.07 | 1.0 |
| | UG2 | Measured | 22.9 | 8.58 | 10.09 | 73 | 2.8 | 2.9 | 0.61 | 0.07 | 6.3 |
| | | Indicated | 9.1 | 8.75 | 10.30 | 73 | 1.1 | 1.2 | 0.25 | 0.03 | 2.6 |
| | | Inferred | 4.5 | 8.74 | 10.33 | 73 | 0.6 | 0.6 | 0.12 | 0.01 | 1.3 |
| | **Total** | | **74.4** | **6.40** | **7.30** | | **7.5** | **6.2** | **1.13** | **0.51** | **15.3** |

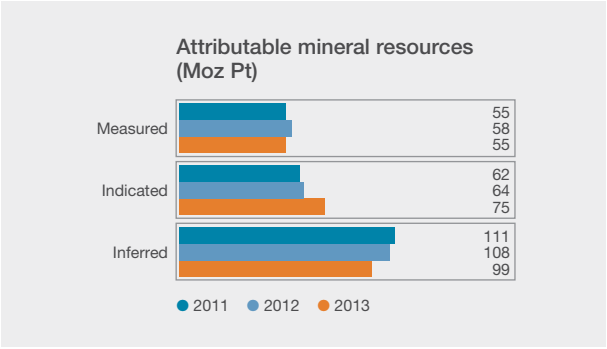
*Note: 6E refers to platinum, palladium, rhodium, ruthenium, iridium and gold.*

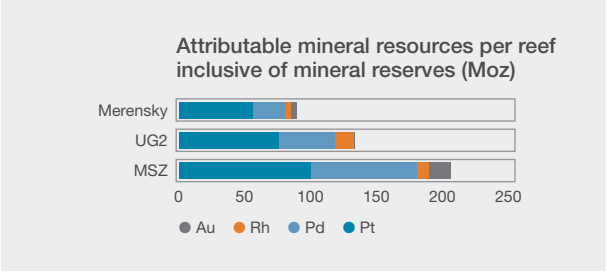
## Attributable mineral resources inclusive of mineral reserves continued
as at 30 June 2013

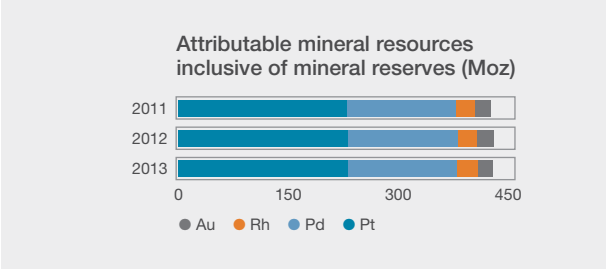
| | | | | 4E | 6E | | Moz | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Orebody | Category | Tonnes Mt | grade g/t | grade g/t | % share | Pt | Pd | Rh | Au | 4E |
| **Afplats** | UG2 | Measured | 58.6 | 5.22 | 6.48 | 74 | 6.0 | 2.7 | 1.12 | 0.05 | 9.8 |
| | | Indicated | 10.6 | 5.05 | 6.28 | 74 | 1.0 | 0.5 | 0.20 | 0.01 | 1.7 |
| | | Inferred | 73.7 | 5.01 | 6.25 | 74 | 7.2 | 3.2 | 1.37 | 0.06 | 11.9 |
| | **Total** | | **142.9** | **5.10** | **6.35** | | **14.3** | **6.4** | **2.69** | **0.11** | **23.4** |
| **Imbasa** | UG2 | Indicated | 15.5 | 4.59 | 5.76 | 60 | 1.4 | 0.6 | 0.26 | 0.01 | 2.3 |
| | | Inferred | 25.3 | 4.52 | 5.69 | 60 | 2.3 | 1.0 | 0.43 | 0.02 | 3.7 |
| **Inkosi** | UG2 | Indicated | 32.2 | 4.86 | 6.12 | 49 | 3.1 | 1.4 | 0.58 | 0.02 | 5.1 |
| | | Inferred | 19.2 | 4.62 | 5.84 | 49 | 1.8 | 0.8 | 0.33 | 0.01 | 2.9 |
| **Imbasa and Inkosi** | **Total** | | **92.2** | **4.67** | **5.88** | | **8.5** | **3.8** | **1.61** | **0.07** | **14.0** |
| **Two Rivers** | Merensky | Indicated | 19.4 | 2.79 | 3.04 | 45 | 1.0 | 0.6 | 0.06 | 0.11 | 1.7 |
| | | Inferred | 5.0 | 2.43 | 2.65 | 45 | 0.2 | 0.1 | 0.01 | 0.03 | 0.4 |
| | UG2 | Measured | 6.4 | 4.69 | 5.66 | 45 | 0.5 | 0.3 | 0.10 | 0.01 | 1.0 |
| | | Indicated | 18.1 | 3.44 | 4.13 | 45 | 1.1 | 0.6 | 0.21 | 0.02 | 2.0 |
| | **Total** | | **48.8** | **3.24** | **3.75** | | **2.9** | **1.6** | **0.38** | **0.17** | **5.1** |
| **Tamboti** | Merensky | Indicated | 38.9 | 2.81 | 3.07 | 100 | 2.2 | 1.0 | 0.14 | 0.19 | 3.5 |
| | | Inferred | 121.9 | 3.17 | 3.47 | 100 | 7.8 | 3.5 | 0.49 | 0.68 | 12.4 |
| | UG2 | Indicated | 48.3 | 4.46 | 5.29 | 100 | 3.7 | 2.5 | 0.68 | 0.08 | 6.9 |
| | | Inferred | 128.3 | 4.39 | 5.22 | 100 | 9.6 | 6.5 | 1.77 | 0.21 | 18.1 |
| | **Total** | | **337.4** | **3.78** | **4.35** | | **23.2** | **13.5** | **3.07** | **1.17** | **41.0** |
| **Zimplats** | MSZ | Measured | 128.2 | 3.63 | 3.84 | 87 | 7.4 | 5.9 | 0.63 | 1.07 | 15.0 |
| | | Indicated | 606.0 | 3.55 | 3.76 | 87 | 34.1 | 26.7 | 2.91 | 5.52 | 69.3 |
| | | Inferred | 1 066.8 | 3.27 | 3.54 | 87 | 54.0 | 44.5 | 5.41 | 8.27 | 112.2 |
| | **Total** | | **1 801.1** | **3.39** | **3.63** | | **95.5** | **77.1** | **8.95** | **14.87** | **196.4** |
| **Mimosa** | MSZ | Measured | 28.9 | 3.75 | 3.99 | 50 | 1.7 | 1.3 | 0.15 | 0.27 | 3.5 |
| | | Indicated | 21.4 | 3.55 | 3.78 | 50 | 1.2 | 0.9 | 0.11 | 0.19 | 2.4 |
| | | Inferred | 16.3 | 3.63 | 3.86 | 50 | 0.9 | 0.7 | 0.08 | 0.16 | 1.9 |
| | **Total** | | **66.7** | **3.66** | **3.89** | | **3.9** | **3.0** | **0.34** | **0.62** | **7.8** |
| **All** | **Total** | | **3 126.4** | **4.22** | **4.74** | | **229.7** | **147.0** | **27.5** | **20.5** | **424.6** |

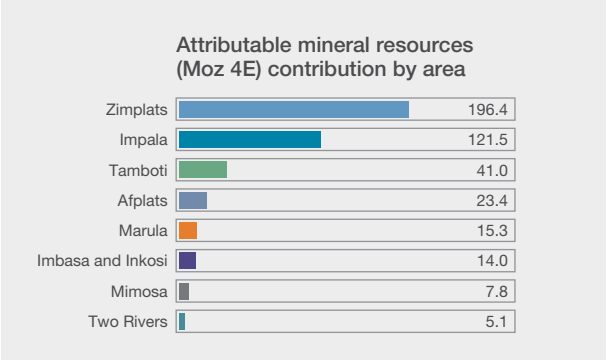
# Attributable mineral resources and mineral reserves
continued



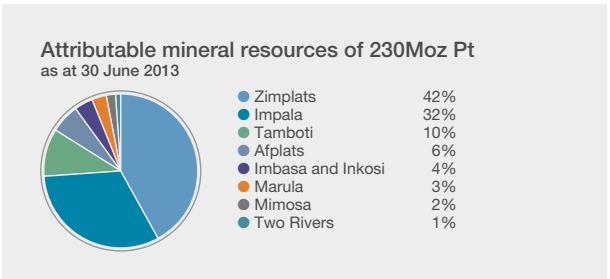




In comparison with the previous annual mineral resource statement there is no material change in the total attributable platinum ounces of 230Moz. The variation at the individual operations and projects are discussed in the relevant detailed reports per section. The changes in these estimates can be attributed to additional information and updated estimates.

The grouping of the platinum ounces per reef shows that some 44% of the attributable Implats mineral resources is hosted by the Great Dyke. The Zimplats mineral resources make up the bulk of these (42% of the total Implats inventory). The detailed sections indicate various movements due to additional work, newly acquired data and updated estimations. There has been some steady improvement in the conversion of inferred mineral resources; the estimate as at 30 June 2013 reflects an increase in indicated and measured mineral resources from 53% to 57%. The graph comparing the attributable 4E for the last few years reflects a stable situation.

There are two potential material impacts on the attributable mineral resources in Zimbabwe – 51% to indigenisation which affects both Zimplats and Mimosa and the Zimplats land gazetted for acquisition. Neither of these had been completed by 30 June 2013, but the reader needs to be fully aware that they will have a significant impact on these figures.

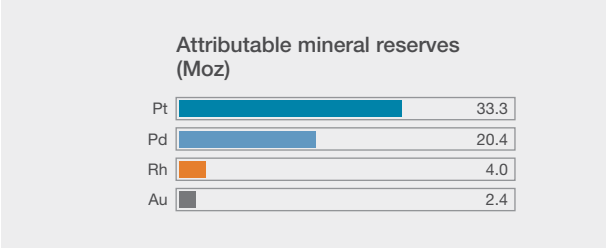


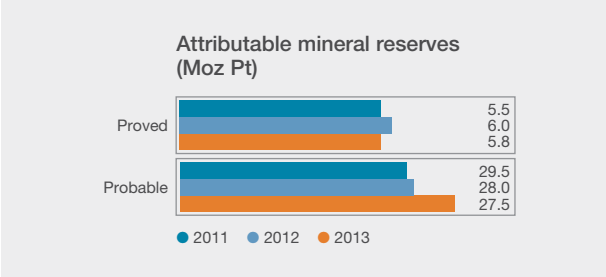
## Attributable mineral reserves
as at 30 June 2013

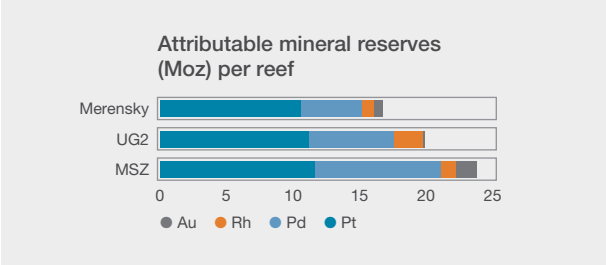
| | Orebody | Category | Tonnes Mt | 4E grade g/t | 6E grade g/t | Implats' share % | Moz Pt | Pd | Rh | Au | 4E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Impala** | Merensky | Proved | 9.5 | 3.91 | 4.36 | 100 | 0.8 | 0.3 | 0.06 | 0.05 | 1.2 |
| | | Probable | 111.1 | 4.34 | 4.85 | 100 | 9.8 | 4.3 | 0.81 | 0.60 | 15.5 |
| | UG2 | Proved | 13.6 | 3.75 | 4.50 | 100 | 1.0 | 0.5 | 0.17 | 0.01 | 1.6 |
| | | Probable | 117.9 | 3.75 | 4.50 | 100 | 8.2 | 4.4 | 1.49 | 0.12 | 14.2 |
| | **Total** | | **252.1** | **4.02** | **4.65** | **100** | **19.8** | **9.5** | **2.53** | **0.78** | **32.6** |
| **Marula** | UG2 | Proved | 2.1 | 4.07 | 4.72 | 73 | 0.1 | 0.1 | 0.03 | 0.00 | 0.3 |
| | | Probable | 17.0 | 4.05 | 4.70 | 73 | 1.0 | 1.0 | 0.21 | 0.02 | 2.2 |
| | **Total** | | **19.1** | **4.05** | **4.70** | **73** | **1.1** | **1.1** | **0.24** | **0.03** | **2.5** |
| **Two Rivers** | UG2 | Proved | 4.7 | 3.30 | 3.99 | 45 | 0.3 | 0.2 | 0.05 | 0.01 | 0.5 |
| | | Probable | 11.1 | 2.81 | 3.39 | 45 | 0.6 | 0.3 | 0.11 | 0.01 | 1.0 |
| | **Total** | | **15.8** | **2.95** | **3.57** | **45** | **0.9** | **0.5** | **0.16** | **0.02** | **1.5** |
| **Zimplats** | MSZ | Proved | 61.5 | 3.34 | 3.53 | 87 | 3.2 | 2.6 | 0.28 | 0.45 | 6.6 |
| | | Probable | 145.2 | 3.33 | 3.54 | 87 | 7.6 | 6.2 | 0.73 | 1.03 | 15.5 |
| | **Total** | | **206.6** | **3.33** | **3.53** | **87** | **10.8** | **8.8** | **1.01** | **1.48** | **22.1** |
| **Mimosa** | MSZ | Proved | 7.6 | 3.52 | 3.75 | 50 | 0.4 | 0.3 | 0.04 | 0.07 | 0.9 |
| | | Probable | 5.9 | 3.26 | 3.48 | 50 | 0.3 | 0.2 | 0.03 | 0.05 | 0.6 |
| | **Total** | | **13.5** | **3.40** | **3.63** | **50** | **0.7** | **0.6** | **0.06** | **0.12** | **1.5** |
| **All** | **Total** | | **507.1** | **3.69** | **4.14** | | **33.3** | **20.4** | **4.01** | **2.43** | **60.1** |

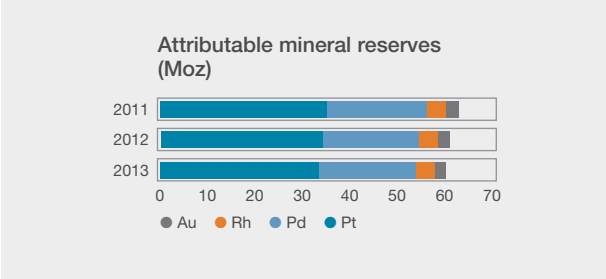
*Underground haulage, 14 Shaft, Impala*

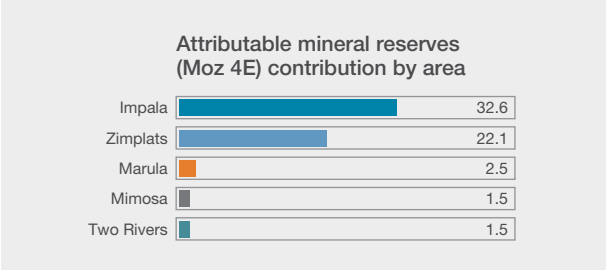
# Attributable mineral resources and mineral reserves
continued



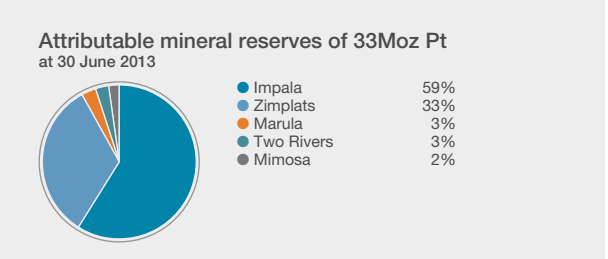




Implats reported mineral reserves of some 34.1Moz Pt in 2012 compared to the estimated 33.3Moz Pt at 30 June 2013. The detailed reports per section indicate various changes and updates. Overall there has been a small improvement in the ratio of proved to probable mineral reserves. The attendant graphs compare the last three reporting periods and indicate an overall decrease in attributable mineral reserves in line with expected depletion. The quantum of proved Merensky Reef mineral reserves at Impala remains low at some 20% below the same for the UG2 Reef.

The reader must be aware of the potential material impacts on the attributable mineral reserves in Zimbabwe. 51% of the ownership is earmarked for indigenisation which affects both Zimplats and Mimosa. These transactions have not been completed by 30 June, but could have a significant impact on these figures.

*Corelogging at Zimplats*



# Mineral resource summary, exclusive of mineral reserves

Both inclusive and exclusive methods of reporting mineral resources are permitted by various international reporting codes. Implats has adopted the inclusive reporting for consistency purposes and to be aligned with its strategic partners. A collation of the mineral resource estimates exclusive of mineral reserves is presented below as it allows for additional transparency. Note that this format is not adhered to by Implats' strategic partners and the corresponding estimates have been derived from details provided to Implats. The tabulation below should be read in conjunction with the mineral reserve statements in the preceding sections. A direct comparison of tonnes and grade is not possible between inclusive and exclusive reporting, owing to the mixing of mineral resource figures with production estimates.

## Summary of mineral resource estimate, exclusive of mineral reserves

as at 30 June 2013

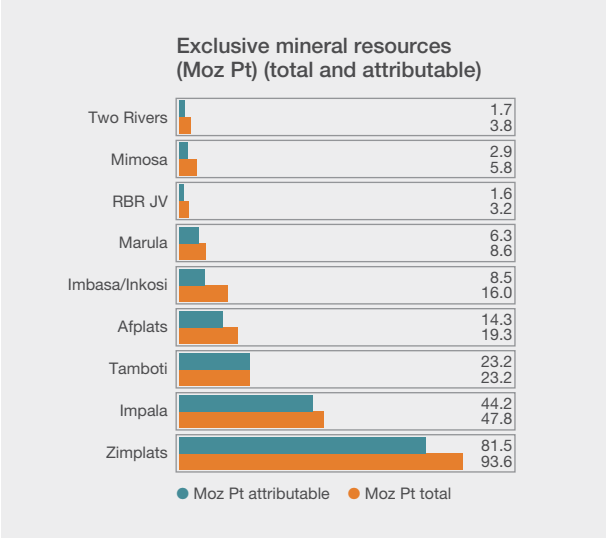
| | | | | Total estimate | | | | | | Attributable estimate | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Orebody | Remarks | Category | Tonnes Mt | 4E grade g/t | 6E grade g/t | 4E Moz | Pt Moz | Implats' share % | Tonnes Mt | 4E Moz | Pt Moz |
| IMPALA | **Merensky** | Impala | Measured | 35.9 | 5.66 | 6.32 | 6.5 | 4.1 | 100 | 35.9 | 6.5 | 4.1 |
| | | | Indicated | 82.0 | 6.24 | 6.96 | 16.4 | 10.4 | 100 | 82.0 | 16.4 | 10.4 |
| | | | Inferred | 68.4 | 5.50 | 6.14 | 12.1 | 7.6 | 100 | 68.4 | 12.1 | 7.6 |
| | **UG2** | | Measured | 35.0 | 7.11 | 8.53 | 8.0 | 4.6 | 100 | 35.0 | 8.0 | 4.6 |
| | | | Indicated | 67.4 | 7.26 | 8.71 | 15.7 | 9.1 | 100 | 67.4 | 15.7 | 9.1 |
| | | | Inferred | 34.1 | 7.44 | 8.92 | 8.2 | 4.7 | 100 | 34.1 | 8.2 | 4.7 |
| | **Merensky** | Impala/RBR JV | Measured | 5.3 | 6.39 | 7.13 | 1.1 | 0.7 | 49 | 2.6 | 0.5 | 0.3 |
| | | | Indicated | 8.4 | 6.97 | 7.78 | 1.9 | 1.2 | 49 | 4.1 | 0.9 | 0.6 |
| | | | Inferred | 28.3 | 5.64 | 6.30 | 5.1 | 3.2 | 49 | 13.9 | 2.5 | 1.6 |
| | **UG2** | | Measured | 1.5 | 7.45 | 8.94 | 0.4 | 0.2 | 49 | 0.8 | 0.2 | 0.1 |
| | | | Indicated | 3.2 | 7.85 | 9.41 | 0.8 | 0.5 | 49 | 1.6 | 0.4 | 0.2 |
| | | | Inferred | 9.5 | 7.49 | 8.99 | 2.3 | 1.3 | 49 | 4.7 | 1.1 | 0.7 |
| | | | **Total Impala** | **379.1** | **6.44** | **7.44** | **78.5** | **47.8** | | **350.4** | **72.6** | **44.2** |
| MARULA | **Merensky** | | Measured | 34.3 | 4.24 | 4.55 | 4.7 | 2.7 | 73 | 25.0 | 3.4 | 2.0 |
| | | | Indicated | 7.7 | 4.26 | 4.54 | 1.1 | 0.6 | 73 | 5.6 | 0.8 | 0.4 |
| | | | Inferred | 9.9 | 4.16 | 4.46 | 1.3 | 0.8 | 73 | 7.2 | 1.0 | 0.6 |
| | **UG2** | | Measured | 17.5 | 8.61 | 10.16 | 4.8 | 2.1 | 73 | 12.8 | 3.5 | 1.6 |
| | | | Indicated | 12.4 | 8.75 | 10.30 | 3.5 | 1.5 | 73 | 9.1 | 2.6 | 1.1 |
| | | | Inferred | 6.2 | 8.74 | 10.33 | 1.7 | 0.8 | 73 | 4.5 | 1.3 | 0.6 |
| | | | **Total Marula** | **88.0** | **6.06** | **6.87** | **17.1** | **8.6** | | **64.3** | **12.5** | **6.3** |

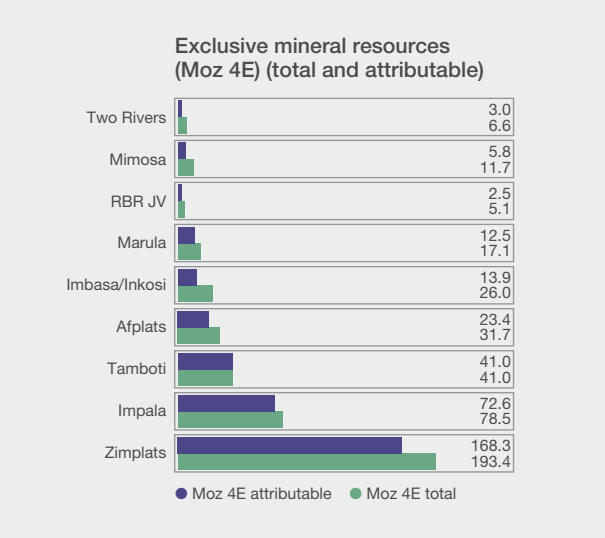
# Mineral resource summary, exclusive of mineral reserves
continued

## Summary of mineral resource estimate, exclusive of mineral reserves continued
as at 30 June 2013

| | | | | Total estimate | | | | | | Attributable estimate | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Orebody | Remarks | Category | Tonnes Mt | 4E grade g/t | 6E grade g/t | 4E Moz | Pt Moz | Implats' share % | Tonnes Mt | 4E Moz | Pt Moz |
| AFPLATS & IMBASA & INKOSI | UG2 | Afplats | Measured | 79.2 | 5.22 | 6.48 | 13.3 | 8.1 | 74 | 58.6 | 9.8 | 6.0 |
| | | | Indicated | 14.3 | 5.05 | 6.28 | 2.3 | 1.4 | 74 | 10.6 | 1.7 | 1.0 |
| | | | Inferred | 99.7 | 5.01 | 6.25 | 16.1 | 9.8 | 74 | 73.7 | 11.9 | 7.2 |
| | | | **Total Afplats** | **193.2** | **5.10** | **6.35** | **31.7** | **19.3** | | **142.9** | **23.4** | **14.3** |
| | | Imbasa | Indicated | 25.8 | 4.59 | 5.76 | 3.8 | 2.3 | 60 | 15.5 | 2.3 | 1.4 |
| | | | Inferred | 42.2 | 4.52 | 5.69 | 6.1 | 3.8 | 60 | 25.3 | 3.7 | 2.3 |
| | | Inkosi | Indicated | 65.8 | 4.86 | 6.12 | 10.3 | 6.3 | 49 | 32.2 | 5.0 | 3.1 |
| | | | Inferred | 39.2 | 4.62 | 5.84 | 5.8 | 3.6 | 49 | 19.2 | 2.8 | 1.8 |
| | | | **Total Imbasa/Inkosi** | **173.0** | **4.68** | **5.90** | **26.0** | **16.0** | | **92.2** | **13.9** | **8.5** |
| TWO RIVERS | Merensky | | Indicated | 43.1 | 2.79 | 3.04 | 3.9 | 2.3 | 45 | 19.4 | 1.7 | 1.0 |
| | | | Inferred | 11.0 | 2.43 | 2.65 | 0.9 | 0.5 | 45 | 5.0 | 0.4 | 0.2 |
| | UG2 | | Measured | 3.5 | 4.99 | 6.00 | 0.6 | 0.3 | 45 | 1.6 | 0.2 | 0.1 |
| | | | Indicated | 10.5 | 3.80 | 4.53 | 1.3 | 0.7 | 45 | 4.7 | 0.6 | 0.3 |
| | | | **Total Two Rivers** | **68.1** | **3.00** | **3.36** | **6.6** | **3.8** | | **30.6** | **3.0** | **1.7** |
| TAMBOTI | Merensky | | Indicated | 38.9 | 2.81 | 3.07 | 3.5 | 2.2 | 100 | 38.9 | 3.5 | 2.2 |
| | | | Inferred | 121.9 | 3.17 | 3.47 | 12.4 | 7.8 | 100 | 121.9 | 12.4 | 7.8 |
| | UG2 | | Indicated | 48.3 | 4.46 | 5.29 | 6.9 | 3.7 | 100 | 48.3 | 6.9 | 3.7 |
| | | | Inferred | 128.3 | 4.39 | 5.22 | 18.1 | 9.6 | 100 | 128.3 | 18.1 | 9.6 |
| | | | **Total Tamboti** | **337.4** | **3.78** | **4.35** | **41.0** | **23.2** | | **337.4** | **41.0** | **23.2** |
| ZIMPLATS | MSZ | | Measured | 70.7 | 3.82 | 4.03 | 8.7 | 4.2 | 87 | 61.5 | 7.5 | 3.7 |
| | | | Indicated | 483.3 | 3.59 | 3.80 | 55.8 | 27.3 | 87 | 420.5 | 48.5 | 23.8 |
| | | | Inferred | 1 226.2 | 3.27 | 3.54 | 129.0 | 62.1 | 87 | 1 066.8 | 112.2 | 54.0 |
| | | | **Total Zimplats** | **1 780.2** | **3.38** | **3.63** | **193.4** | **93.6** | | **1 548.8** | **168.3** | **81.5** |
| MIMOSA | MSZ | | Measured | 39.9 | 3.72 | 3.96 | 4.8 | 2.3 | 50 | 20.0 | 2.4 | 1.2 |
| | | | Indicated | 27.1 | 3.55 | 3.77 | 3.1 | 1.5 | 50 | 13.6 | 1.5 | 0.8 |
| | | | Inferred | 32.7 | 3.63 | 3.87 | 3.8 | 1.9 | 50 | 16.3 | 1.9 | 1.0 |
| | | | **Total Mimosa** | **99.7** | **3.64** | **3.88** | **11.7** | **5.8** | **50** | **49.9** | **5.8** | **2.9** |
| | **All mineral resources, exclusive of mineral reserves** | | Measured | 323 | 5.09 | 5.61 | 53 | 30 | | 254 | 42 | 24 |
| | | | Indicated | 938 | 3.97 | 4.85 | 130 | 71 | | 773 | 109 | 59 |
| | | | Inferred | 1 858 | 3.73 | 4.19 | 223 | 118 | | 1 589 | 190 | 100 |
| | | | **Total** | **3 119** | **3.95** | **4.53** | **406** | **218** | | **2 616** | **340** | **183** |

The tabulation above reflects both the total and attributable mineral resource tonnages, 4E and Pt ounces. Some 216Moz Pt was reported last year. The corresponding figure is 218Moz Pt at 30 June 2013. This close comparison confirms that no new major mineral resource area has been converted from a mineral resource to a mineral reserve. The mineral resources, exclusive of mineral reserves, are depicted in the graphs below comparing the total resource with the attributable mineral resources. The comparison is shown for both Pt and 4E ounces.




*Phase 1 and 2 Concentrator, Ngezi, Zimplats*

# Reconciliation

The consolidated high-level reconciliation of total mineral resources and mineral reserves for the Implats Group of companies is shown below. These high-level variances are relatively small. Particulars of these variances in addition to depletions are illustrated in more detail in the sections by operation. Rounding of numbers may result in computational discrepancies, specifically in these high-level comparisons.

## Total mineral resources tonnage (million), inclusive of mineral reserves

| | 2012 | Variance | 2013 | Attributable |
|---|---|---|---|---|
| **Impala*** | 592 | 0 | **592** | 563 |
| **Marula** | 103 | (1) | **102** | 74 |
| **Afplats** | 193 | 0 | **193** | 143 |
| **Imbasa/Inkosi** | 159 | 14 | **173** | 92 |
| **Two Rivers** | 106 | 2 | **108** | 49 |
| **Tamboti** | 319 | 19 | **337** | 337 |
| **Zimplats** | 1 904 | 166 | **2 070** | 1 801 |
| **Mimosa** | 135 | (1) | **133** | 67 |
| **Totals** | **3 510** | **199** | **3 709** | **3 126** |

** Includes Impala/RBR JV.*

- In summary, the comparison does not indicate material differences; the total estimate for 2013 is slightly higher despite the depletion during the year
- The positive variance at Zimplats can be ascribed to the additional information, particularly in the area north of Portal 10. The updated estimate resulted in an increase in the overall mineral resource estimate
- The small positive variance at Imbasa and Inkosi is the result of updated estimates following further exploration drilling at the prospecting right areas
- At Tamboti the small positive variance in the mineral resource tonnage is also the result of additional data and updated estimation models. Note that the updated average grade estimate for this project is lower than the previous reported grade.

## Total mineral resources (Moz Pt), inclusive of mineral reserves

| | 2012 | Depletion | Other changes | 2013 | Attributable |
|---|---|---|---|---|---|
| **Impala*** | 75.5 | (0.98) | 3.0 | **77.5** | 73.9 |
| **Marula** | 10.3 | (0.10) | 0.0 | **10.3** | 7.5 |
| **Afplats** | 19.6 | (0.00) | (0.3) | **19.3** | 14.3 |
| **Imbasa/Inkosi** | 15.2 | (0.00) | 0.8 | **16.0** | 8.5 |
| **Two Rivers** | 6.6 | (0.22) | 0.1 | **6.5** | 2.9 |
| **Tamboti** | 27.1 | (0.00) | (3.8) | **23.2** | 23.2 |
| **Zimplats** | 107.4 | (0.27) | 2.7 | **109.8** | 95.5 |
| **Mimosa** | 7.9 | (0.15) | 0.0 | **7.7** | 3.9 |
| **Totals** | **269.6** | **(1.72)** | **2.4** | **270.3** | **229.7** |

*Notes*
- *Depletion was adjusted by global concentrator and mine call factors.*
- *Potential impact of pillar losses was taken into account.*

** Includes Impala/RBR JV.*

- The year-on-year comparison does not show any change in the total attributable platinum mineral resource
- The variances depicted in the table and graph is the result of additional information and updated models
- At Impala and Zimplats there are positive variances
- The variance at Tamboti is material as the estimated platinum content is some 14% lower than reflected in previous statements. The updated estimate has been sourced from the independent Competent Persons' estimate completed by The Mineral Corporation.

Year-on-year comparisons for the mineral reserve estimates are summarised below, both in tonnes and platinum ounces estimates.

## Total mineral reserves tonnes (million)

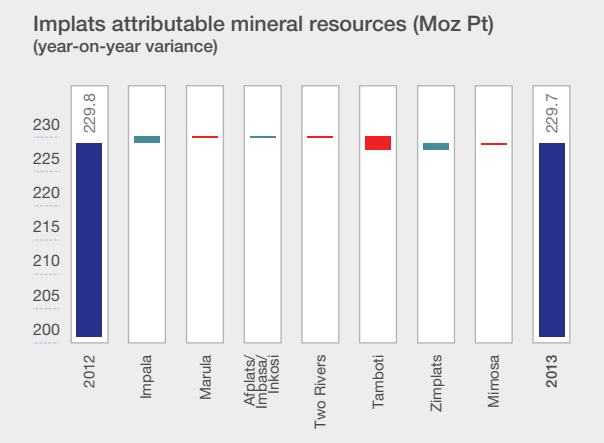
| | 2012 | Depletion | Other changes | 2013 | Attributable |
|---|---|---|---|---|---|
| **Impala** | 263 | (9.6) | (1.6) | **252** | 252 |
| **Marula** | 26 | (1.6) | 1.5 | **26** | 19 |
| **Two Rivers** | 35 | (3.1) | 3.1 | **35** | 16 |
| **Zimplats** | 227 | (4.7) | 15.0 | **238** | 207 |
| **Mimosa** | 29 | (2.3) | 0.0 | **27** | 14 |
| **Totals** | **581** | **(21.3)** | **18.0** | **578** | **507** |

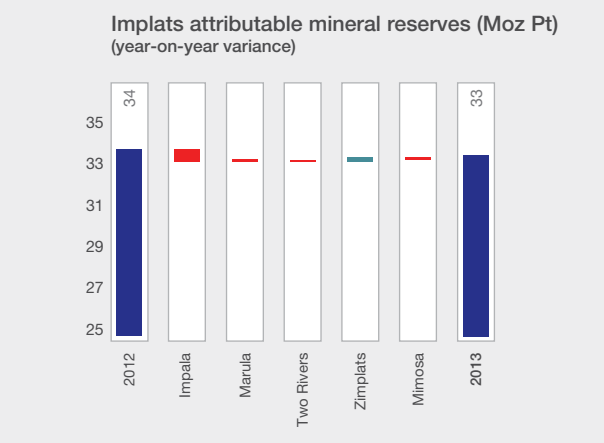
## Total mineral reserves (Moz Pt)

| | 2012 | Depletion | Other changes | 2013 | Attributable |
|---|---|---|---|---|---|
| **Impala** | 20.8 | (0.86) | (0.2) | **19.8** | 19.8 |
| **Marula** | 1.5 | (0.09) | 0.1 | **1.5** | 1.1 |
| **Two Rivers** | 1.9 | (0.19) | 0.2 | **1.9** | 0.9 |
| **Zimplats** | 12.1 | (0.25) | 0.6 | **12.5** | 10.8 |
| **Mimosa** | 1.7 | (0.14) | (0.1) | **1.5** | 0.7 |
| **Totals** | **37.9** | **(1.52)** | **0.7** | **37.1** | **33.3** |

*Depletion was adjusted by global concentrator factors.*

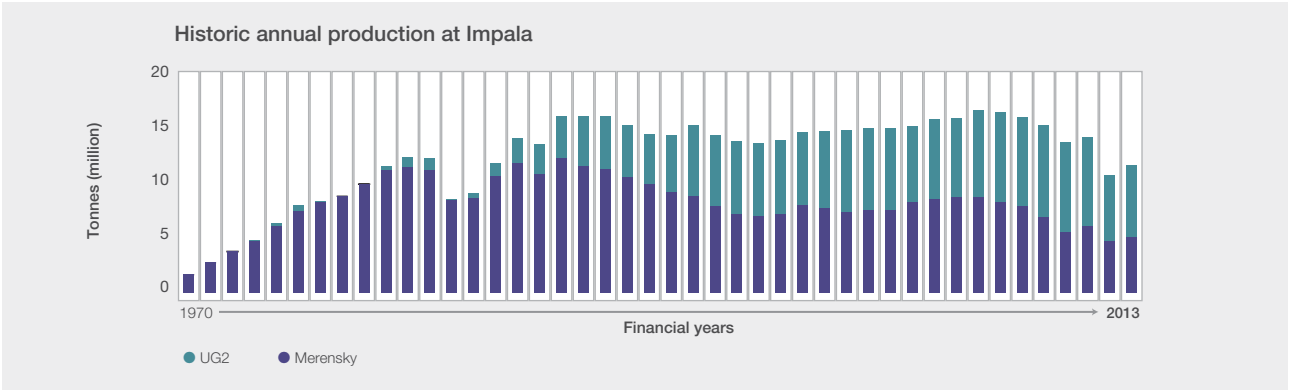
- ▷ The year-on-year comparison does not show material differences
- ▷ The variances are discussed in the detailed reports per operation
- ▷ The negative variance at Impala is impacted by some mineral reserves having been written off due to safety and cost considerations
- ▷ At Zimplats the positive variance is mostly due to the inclusion of shallow areas that were previously not included in the mineral reserve estimate and a review of modifying factors which resulted in an increase in the amount of dilution accounted for in the estimate, this also contributed to the increase.

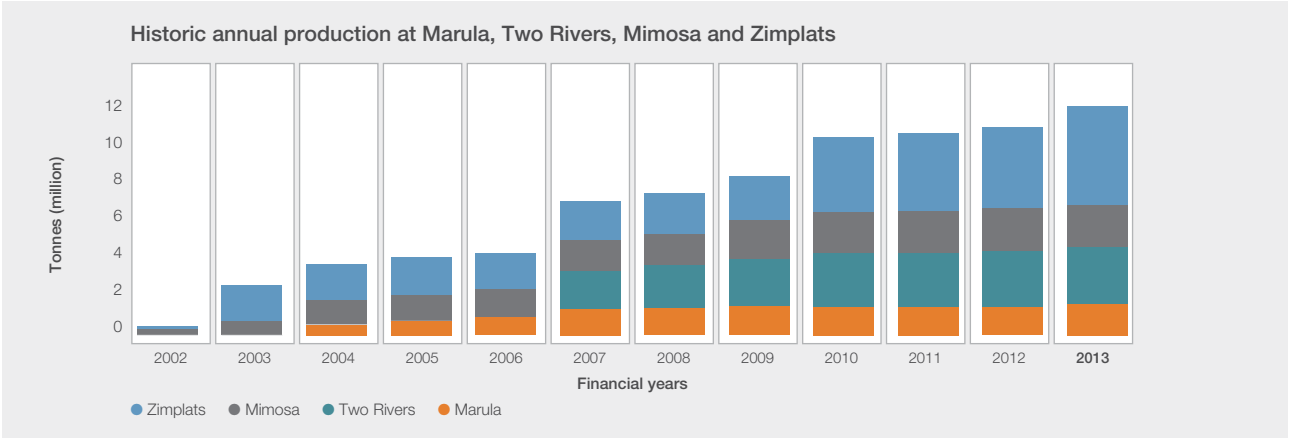


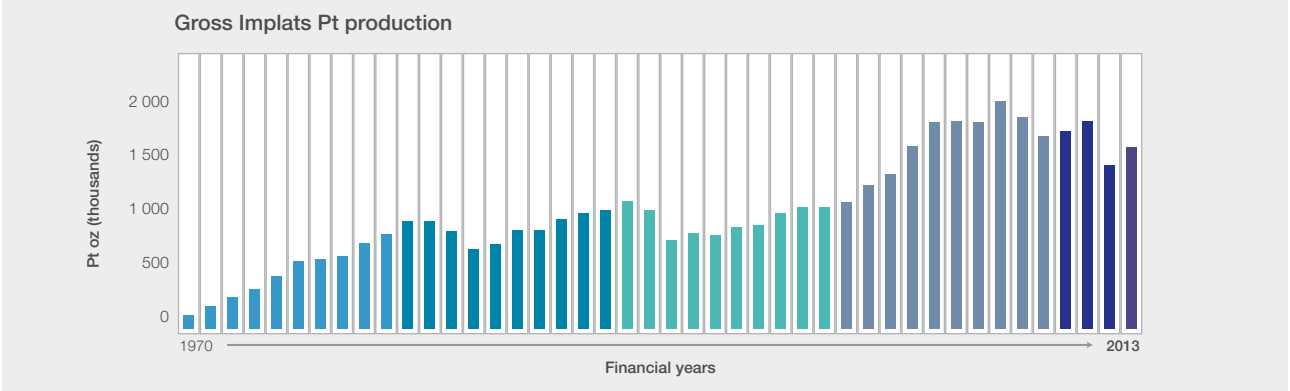



# Historic production

Mining commenced in 1969 at Impala; subsequently Implats has grown the mineral resource portfolio and related platinum production. The production performance for 2013 at Impala was only marginally higher than the previous year as productivity and mining flexibility remained constrained. Summary production statistics are provided below as an overall perspective of the Company performance. The total production in terms of tonnage and platinum ounces is depicted in the accompanying graphs; notably the tonnage mined at the other operations, excluding Impala, continues to exceed the 11Mt level.



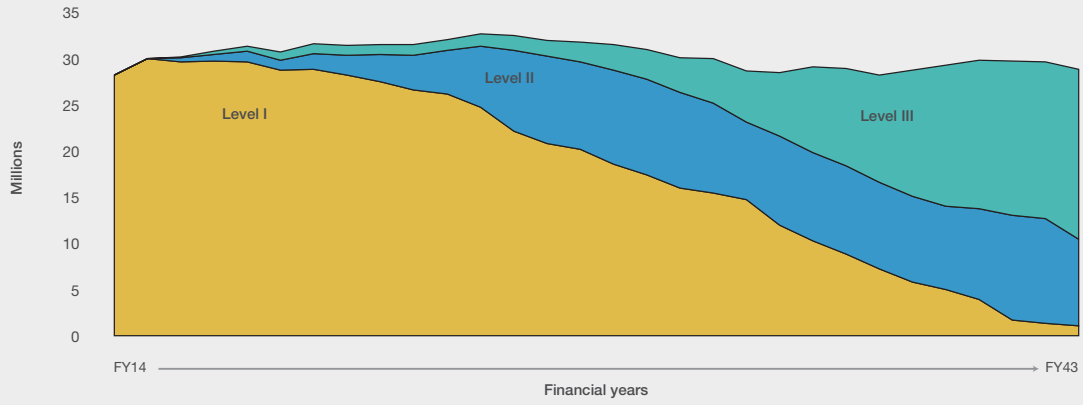



# Life-of-mine production

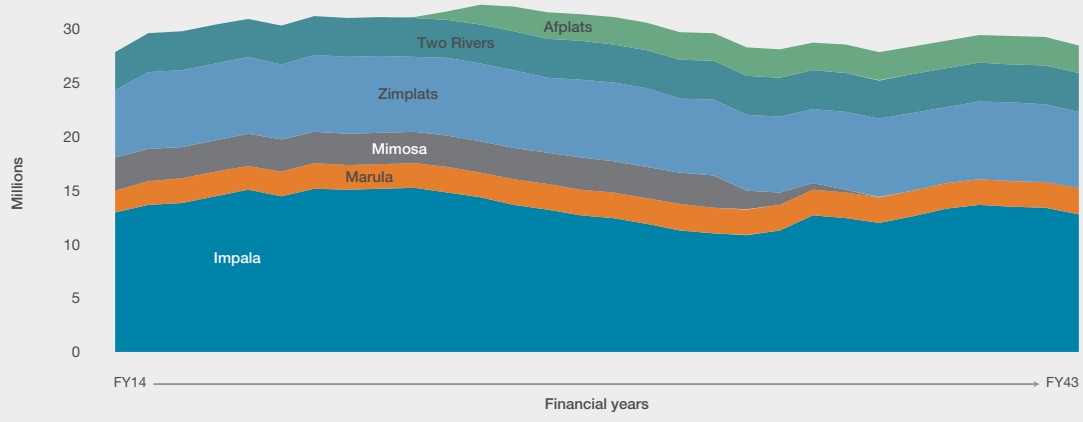
The high-level LoM (30-year) plan is depicted in the detailed sections per operation describing each operation in terms of planning Levels I, II and III. These do not include all the blue sky opportunities as this is often in the scenario or pre-feasibility stage of planning; some of this potential is specifically excluded so as not to create expectations. Caution should be taken when considering the LoM plans as these may vary if assumptions, modifying factors, exchange rates or metals prices change materially. In this regard it should be noted that the Impala LoM in particular has been adjusted in view of aspects such as cash preservation, the deferral of new projects such as 18 Shaft, the outlook on productivity and planned medium-term production levels. This is shown in more detail on page 34.

These profiles should be read in conjunction with mineral resource estimates to judge long-term potential. The graphs below show the consolidated high-level LoM plans collated from the individual profiles per operation. The pictorial 30-year profiles are shown as a combination of Levels III, II and I and also the contribution by operation. Note that the contribution by Afplats is included in these combined profiles. It is clear from a combined view that a large proportion of the 30-year plan (some 41%) is still in Levels III and II and would require further studies and approval. Note that the profiles below illustrate the total tonnage; the volumes attributable to Implats will be lower.

Implats: 30-year tonnage profile per category




Implats: 30-year tonnage profile per operation



# Mineral resources and mineral reserves
/ **Impala** /

# ▷ Impala

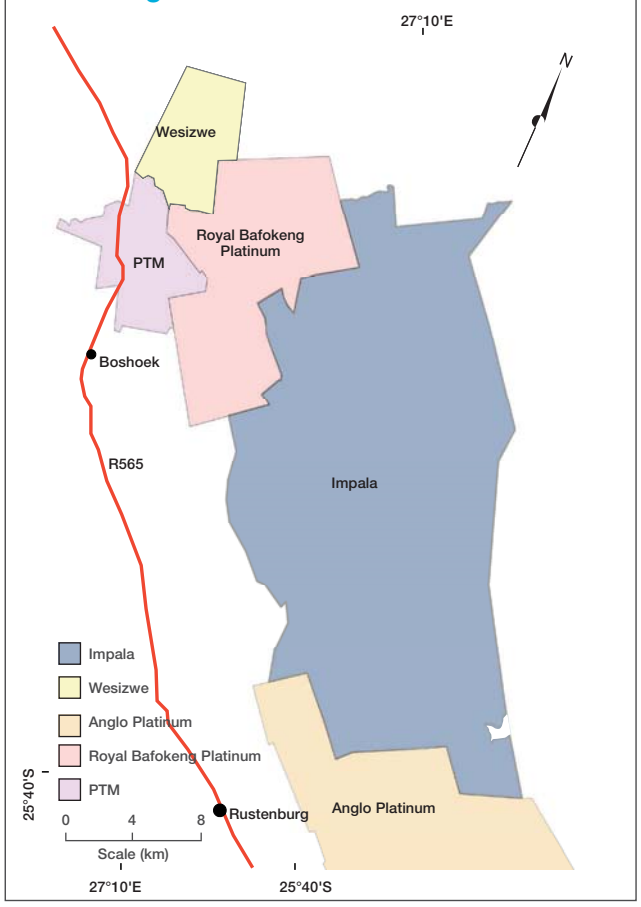
## Impala mineral resources and mineral reserves

The Impala mining operation is located just to the north of Rustenburg on the western limb of the Bushveld Complex. The location of the Impala operation showing the adjacent mines is shown in the accompanying locality map. Impala, together with the joint venture with the RBR, holds contiguous mining and prospecting rights over a total area of 33 534ha across 20 farms or portions of farms.

Both the Merensky and UG2 Reefs are exploited. The Merensky Reef is generally composed of an upper feldspathic pyroxenite, overlying a thin basal chromitite stringer, followed by an anorthosite to norite footwall. Locally this is termed a “pyroxenite reef”. Occasionally a pegmatoidal pyroxenite and a second chromitite stringer may be developed between the feldspathic pyroxenite and the footwall units. This is termed a “pegmatoid reef”. As an aid to mining operations the Merensky Reef is further defined as being “A”, “B” or “C” Reef if it rests on specific footwall units, ie locally called Footwall 1, 2 and 3 respectively.

The UG2 Reef is defined as a main chromitite layer, with most of the mineralisation confined to this unit, followed by a poorly mineralised pegmatoidal pyroxenite footwall. The hangingwall to the main chromitite layer is a feldspathic pyroxenite containing up to four thin weakly mineralised chromitite layers.

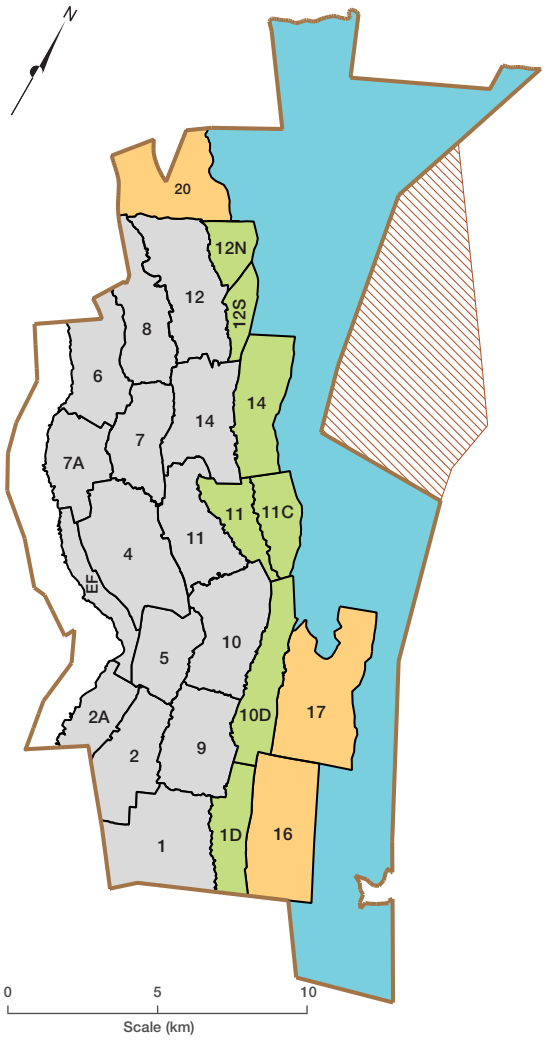
**Impala locality map showing surrounding mineral right areas**

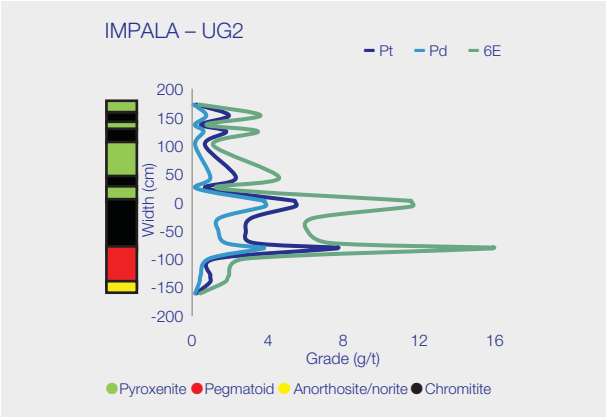


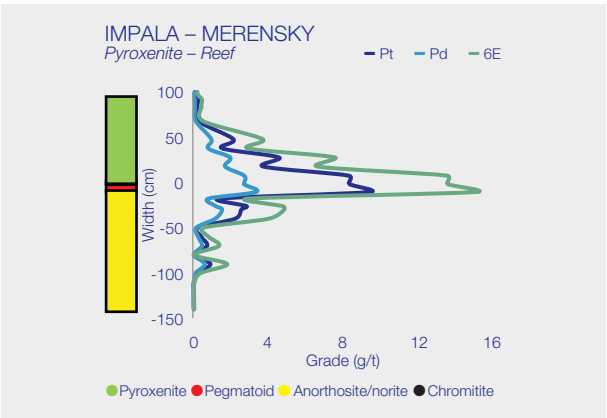
Both mineralised horizons dip gently away from the sub-outcrop in a north-easterly direction at 10° to 12°. The vertical separation between the Merensky and UG2 Reefs varies from about 125m in the south to 45m in the north of the mining area. The reefs may be disrupted by minor and major faults, lamprophyre and dolerite dykes, late stage ultramafic replacement pegmatoid bodies and potholes. The latter features are generally circular in shape and represent “erosion” or “slumping” into the footwall units. They vary in size from a few metres to tens of metres across and up to tens of metres in depth. All the abovementioned features contribute to dilution of the mineralised horizons and are accounted for in the mineral resource and mineral reserve statements as geological losses.

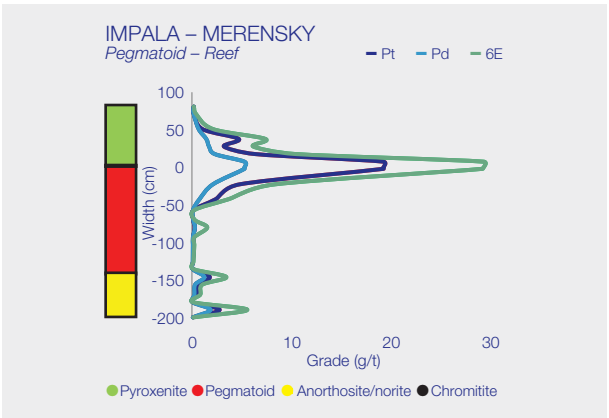
The Merensky and UG2 Reefs are mined concurrently; the mining method is predominantly conventional breast mining. Mechanised (trackless) bord and pillar mining occurs in selected Merensky Reef areas on two of the shafts (12 and 14 Shafts). Some small-scale opencast mining was undertaken at the outcrop positions to a maximum depth of 50m. This was terminated in the past

## Shafts, declines and projects



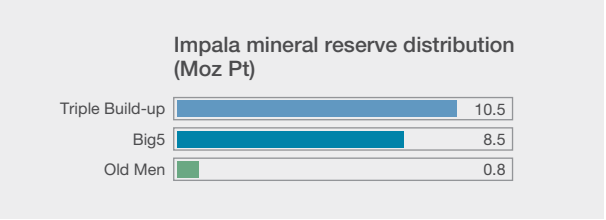
# Mineral resources and mineral reserves
/ **Impala** / continued

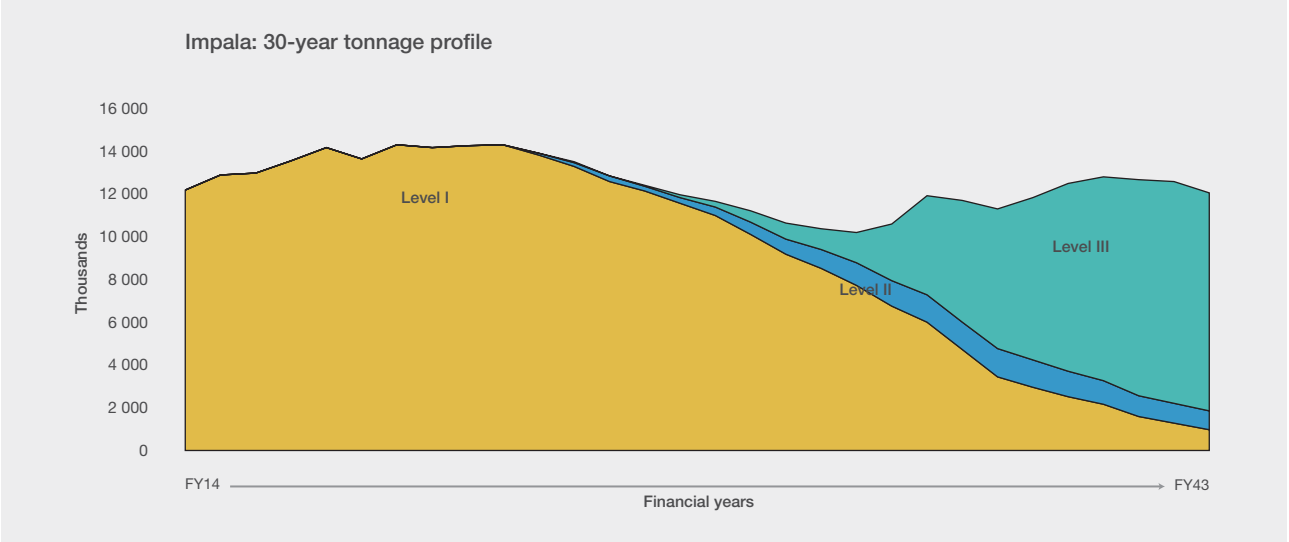
year as the available areas were mined out. Stoping at the operations is carried out through conventional double-sided breast mining in accordance with Impala's best practice principles. The haulages are developed in opposite directions from cross-cuts connected to a central shaft position, following the two reef horizons on strike in the footwall and are defined as half levels. Footwall drives are developed at approximately 18m to 20m below the reef horizon with on-reef raise/winze connections being between 180m and 250m apart. Panel face lengths vary from 15m to 30m for both Merensky and UG2 Reefs, with panels being typically separated by 6 x 3m grid pillars with 2m ventilation holings. Stoping widths are approximately 1.2m and 1.0m for conventional Merensky and UG2 Reefs respectively, depending on the width of the economical reef horizon. The average stoping width of mechanised panels is about 1.9m.

Mine design and scheduling of operational shafts is undertaken utilising CadsMine™ software, while the mine design and scheduling for projects are done using Mine 2-4D™ software. Geological models/ore blocks are updated and validated using G-Blocks and boundaries in the MRM information system. Grade block models are developed utilising Isatis™ software. The mine design for the first five years is monthly per crew. This is extended on an annual basis for the remaining period of the LoM. Key modifying factors such as overbreak, underbreak, off-reef mining, development dimensions, sweepings and mine call factors are applied to the mining area (centare profile) to generate tonnage and grade profiles. The planning sequence is currently under review.

The shafts at Impala are locally divided into three groupings, the so-called Old Men (4, 6, 7, 7A, 8, 9 and E/F), the Big5 (1, 10, 11, 12 and 14) and the Triple Build-up (16, 17 and 20). The distribution of the reserves is depicted in the accompanying graph; it is clear that the bulk of the reserves (53%) is located in the Triple Build-up project shafts.

The 30-year LoM profile for Impala is depicted in the graph that follows. LoM I comprises the profiles of 14 operating vertical shafts, five associated with declines and three approved project shafts (16, 17 and 20) under construction and/or ramp-up. The 20 Shaft UG2 Reef and the extension of 20 Shaft Merensky Reef to 26 and 27 Levels constitute LoM II. LoM III is made up of potential future shaft blocks currently in different stages of project studies. This profile is based on current assumptions and may change in future. Note in particular that the profile has been adjusted from the previous outlook given a number of considerations, such as funding for new shafts like 18 Shaft which has been deferred. Medium-term production plans have been moderated in view of current productivity levels.



## Impala mineral resources and mineral reserves (100%)

as at 30 June 2013

| Mineral resources | | as at 30 June 2013 | | | | | | | as at 30 June 2012 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Orebody | Category | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | 4E Moz | 6E Moz | Pt Moz | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | 4E Moz | Pt Moz |
| **Merensky** | Measured | 145.8 | 117 | 6.62 | 7.39 | 31.0 | 34.6 | 19.6 | 153.7 | 125 | 5.90 | 6.59 | 29.2 | 18.5 |
| | Indicated | 84.8 | 112 | 6.29 | 7.03 | 17.2 | 19.2 | 10.8 | 87.0 | 107 | 6.15 | 6.86 | 17.2 | 10.9 |
| | Inferred | 68.4 | 125 | 5.50 | 6.14 | 12.1 | 13.5 | 7.6 | 65.2 | 130 | 5.46 | 6.09 | 11.4 | 7.2 |
| **UG2** | Measured | 134.1 | 63 | 7.31 | 8.76 | 31.5 | 37.8 | 18.3 | 135.9 | 64 | 7.32 | 8.80 | 32.0 | 18.6 |
| | Indicated | 68.1 | 64 | 7.26 | 8.71 | 15.9 | 19.1 | 9.2 | 68.3 | 63 | 7.22 | 8.67 | 15.9 | 9.2 |
| | Inferred | 34.1 | 66 | 7.44 | 8.92 | 8.2 | 9.8 | 4.7 | 33.3 | 63 | 7.40 | 8.89 | 7.9 | 4.6 |
| | **Total** | **535.3** | | **6.73** | **7.78** | **115.8** | **133.9** | **70.3** | **543.4** | | **6.50** | **7.53** | **113.6** | **68.9** |

| Mineral reserves | | as at 30 June 2013 | | | | | | | as at 30 June 2012 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Orebody | Category | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | 4E Moz | 6E Moz | Pt Moz | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | 4E Moz | Pt Moz |
| **Merensky** | Proved | 9.5 | 133 | 3.91 | 4.36 | 1.2 | 1.3 | 0.8 | 10.9 | 129 | 4.10 | 4.57 | 1.4 | 0.9 |
| | Probable | 111.1 | 127 | 4.34 | 4.85 | 15.5 | 17.3 | 9.8 | 113.2 | 131 | 4.25 | 4.74 | 15.5 | 9.8 |
| **UG2** | Proved | 13.6 | 105 | 3.75 | 4.50 | 1.6 | 2.0 | 1.0 | 15.9 | 98 | 4.07 | 4.89 | 2.1 | 1.2 |
| | Probable | 117.9 | 105 | 3.75 | 4.50 | 14.2 | 17.0 | 8.2 | 123.2 | 99 | 3.87 | 4.65 | 15.3 | 8.9 |
| | **Total** | **252.1** | | **4.02** | **4.65** | **32.6** | **37.7** | **19.8** | **263.3** | | **4.05** | **4.70** | **34.3** | **20.8** |

| Mineral resources | | as at 30 June 2013 | | | as at 30 June 2012 | | |
|---|---|---|---|---|---|---|---|
| Orebody | Category | Tonnes Mt | Pt grade g/t | Pt Moz | Tonnes Mt | Pt grade g/t | Pt Moz |
| **1 and 2 Tailings Complex** | Indicated | 48.1 | 0.42 | 0.6 | 48.1 | 0.42 | 0.6 |

# Mineral resources and mineral reserves
/ **Impala** / continued

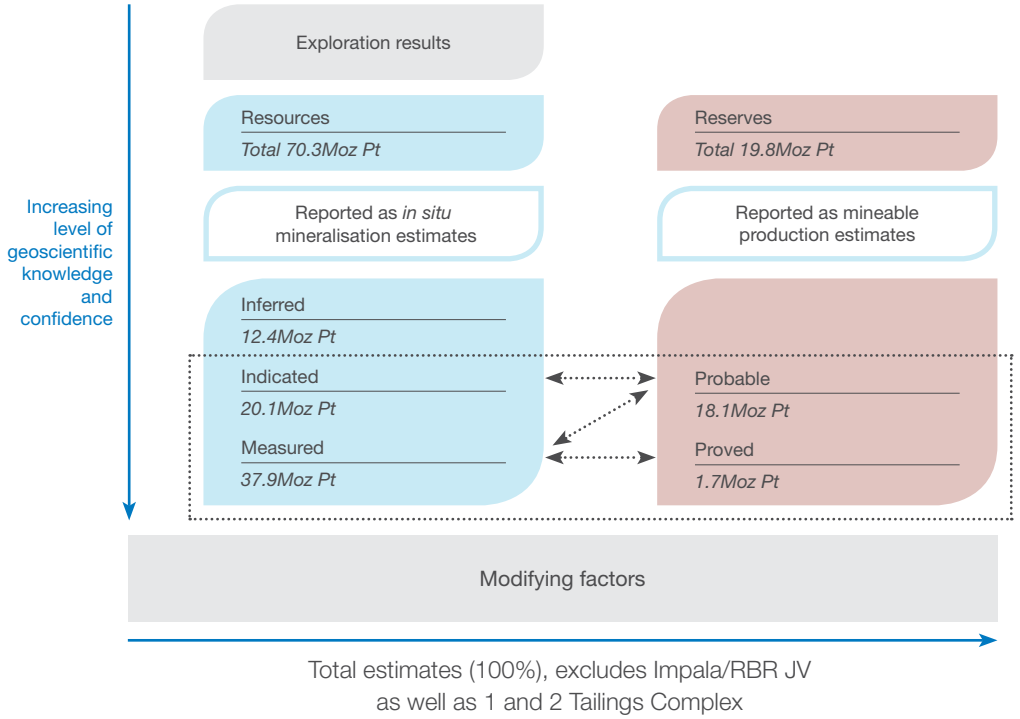
## Impala/RBR JV

| Mineral resources | | as at 30 June 2013 | | | | | | | as at 30 June 2012 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Orebody | Category | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | 4E Moz | 6E Moz | Pt Moz | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | 4E Moz | Pt Moz |
| Merensky | Measured | 5.3 | 154 | 6.39 | 7.13 | 1.1 | 1.2 | 0.7 | 5.3 | 152 | 6.52 | 7.28 | 1.1 | 0.7 |
| | Indicated | 8.4 | 151 | 6.97 | 7.78 | 1.9 | 2.1 | 1.2 | 7.0 | 150 | 6.84 | 7.64 | 1.5 | 1.0 |
| | Inferred | 28.3 | 131 | 5.64 | 6.30 | 5.1 | 5.7 | 3.2 | 23.4 | 122 | 6.51 | 7.27 | 4.9 | 3.1 |
| UG2 | Measured | 1.5 | 53 | 7.45 | 8.94 | 0.4 | 0.4 | 0.2 | 2.3 | 53 | 7.49 | 9.00 | 0.6 | 0.3 |
| | Indicated | 3.2 | 54 | 7.85 | 9.41 | 0.8 | 1.0 | 0.5 | 1.8 | 54 | 7.86 | 9.44 | 0.5 | 0.3 |
| | Inferred | 9.5 | 58 | 7.49 | 8.99 | 2.3 | 2.8 | 1.3 | 8.6 | 57 | 7.43 | 8.93 | 2.1 | 1.2 |
| | **Total** | **56.3** | | **6.40** | **7.31** | **11.6** | **13.2** | **7.1** | **48.5** | | **6.82** | **7.78** | **10.6** | **6.6** |

## Comparison between mineral resource estimate for UG2 chromitite layer and the estimate for the UG2 minimum mining width

| Mineral resources | | Minimum mining width as at 30 June 2013 | | | | | | | UG2 chromitite layer as at 30 June 2013 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Orebody | Category | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | 4E Moz | 6E Moz | Pt Moz | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | 4E Moz | 6E Moz | Pt Moz |
| UG2 | Measured | 191.2 | 95 | 5.50 | 6.59 | 33.8 | 40.5 | 19.6 | 134.1 | 63 | 7.31 | 8.76 | 31.5 | 37.8 | 18.3 |
| | Indicated | 95.5 | 95 | 5.47 | 6.57 | 16.8 | 20.2 | 9.8 | 68.1 | 64 | 7.26 | 8.71 | 15.9 | 19.1 | 9.2 |
| | Inferred | 46.2 | 95 | 5.90 | 7.08 | 8.8 | 10.5 | 5.1 | 34.1 | 66 | 7.44 | 8.92 | 8.2 | 9.8 | 4.7 |
| | **Total** | **333.0** | | **4.81** | **5.78** | **59.4** | **71.2** | **34.5** | **236.3** | | **7.31** | **8.77** | **55.6** | **66.6** | **32.2** |

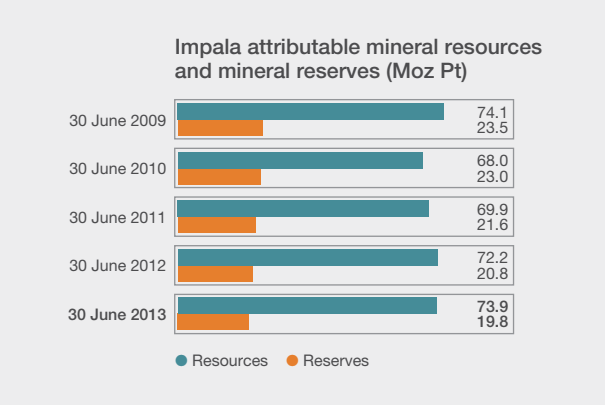
## Relationship between exploration results, mineral resources and mineral reserves (100%)

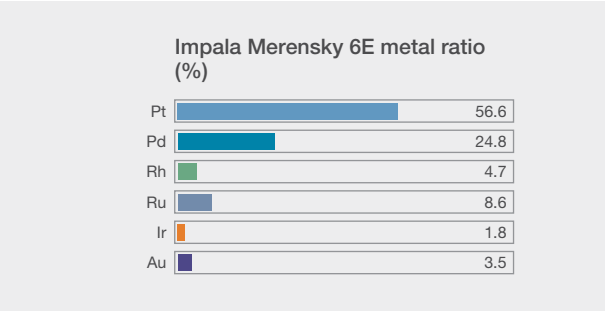


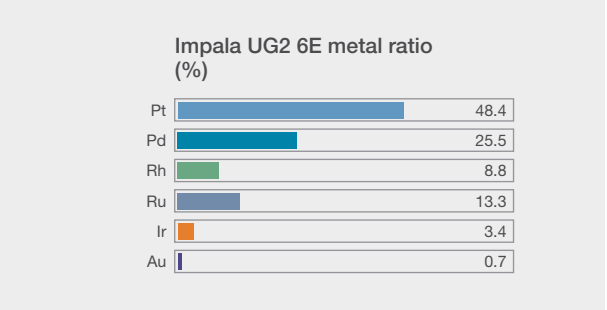

Total estimates (100%), excludes Impala/RBR JV as well as 1 and 2 Tailings Complex

## Notes

- Mineral resources are quoted inclusive of mineral reserves
- Mineral resource estimates allow for estimated geological losses but not for anticipated pillar losses during eventual mining
- The modifying factors used to convert a mineral resource to a mineral reserve are derived from historical performance using an in-house ore accounting system. This system is able to provide dilution factors that are applied to *in situ* estimates to project the final product delivered to the mill
- Mineral reserves quoted reflect the grade delivered to the mill
- The year-on-year reduction in proved Merensky mineral reserves illustrates that main development remains a focus area
- The quantum of proved Merensky Reef mineral reserves at Impala remains low at some 20% below the same for the UG2 Reef
- The UG2 mineral reserve widths show an increase from last year due to additional allowance for a new support standard (netting and bolting)
- The increase in the mineral resource of the joint venture area relates to remodelling of additional data both in the block as well as surrounding area
- The UG2 mineral resources estimate is compared with a minimum mining cut of 95cm. This illustrates the significant dilution as very little metal is added by the increase to the mining width
- Mineral resources and mineral reserve grades are shown for both 4E and 6E. The 4E grade was recalculated from 6E to represent the summation of individual Pt, Pd, Rh and Au grades
- The mineral resources and mineral reserves involved with the royalty agreement with the RBPlat are excluded in this report as the ownership vests with the RBPlat. This refers to the agreement with the RBPlat to access certain of its mining areas at Bafokeng Rasimone Platinum Mine (BRPM) from 6, 8 and 20 Shafts
- Rounding of numbers may result in minor computational discrepancies; mineral resource estimates are inherently imprecise in nature; the results tabulated in this report must be read as estimates and not as calculations; inferred mineral resources in particular are qualified as approximations.

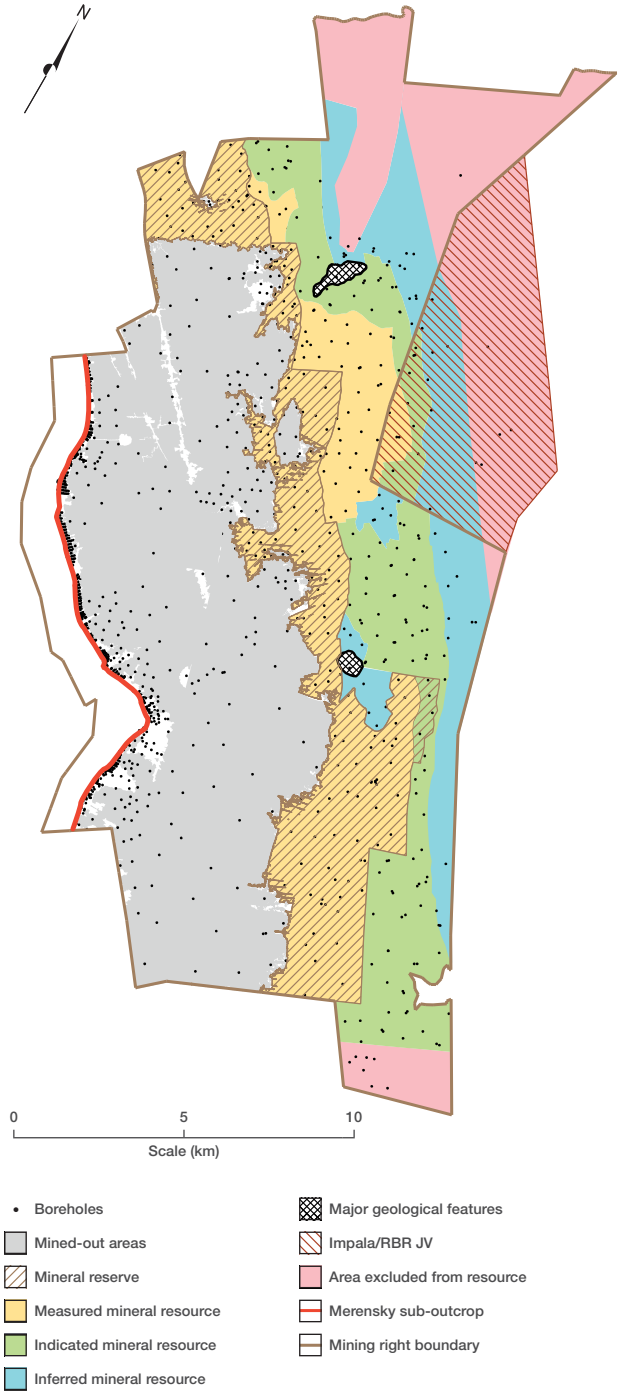


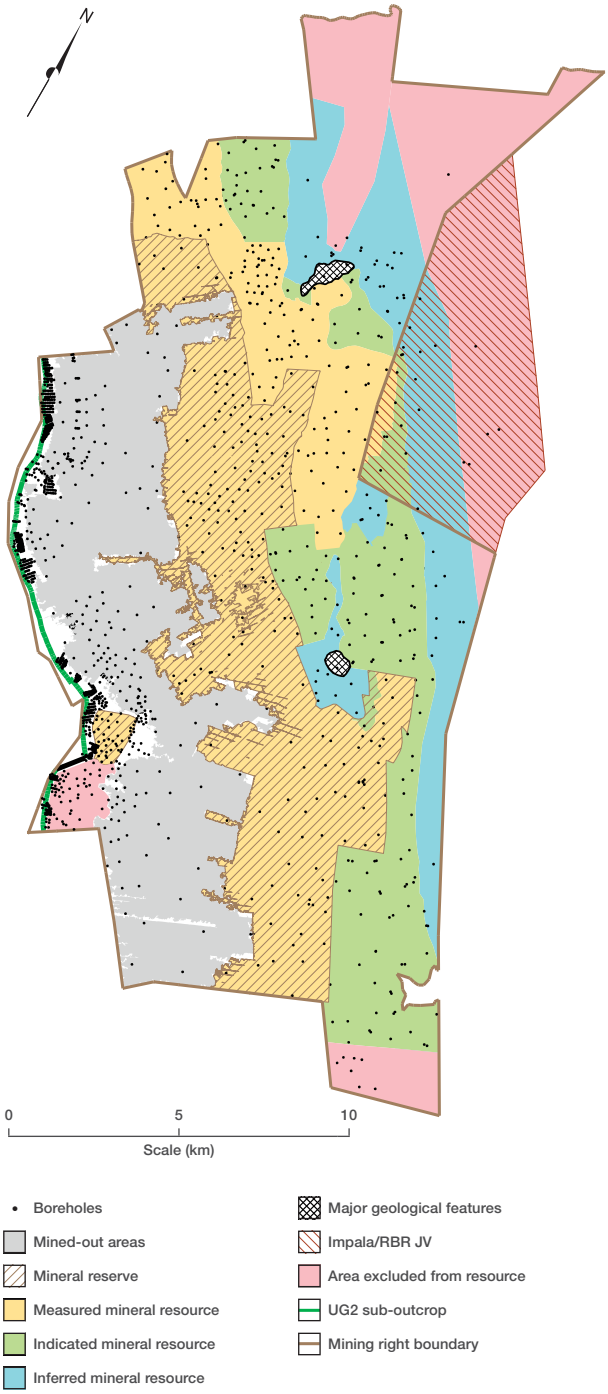



# Mineral resources and mineral reserves
/ **Impala** / continued

## Impala Merensky Reef mineral resources and mineral reserves




## Impala UG2 Reef mineral resources and mineral reserves



*20 Shaft, Impala*

# Mineral resources and mineral reserves
/ **Marula** /

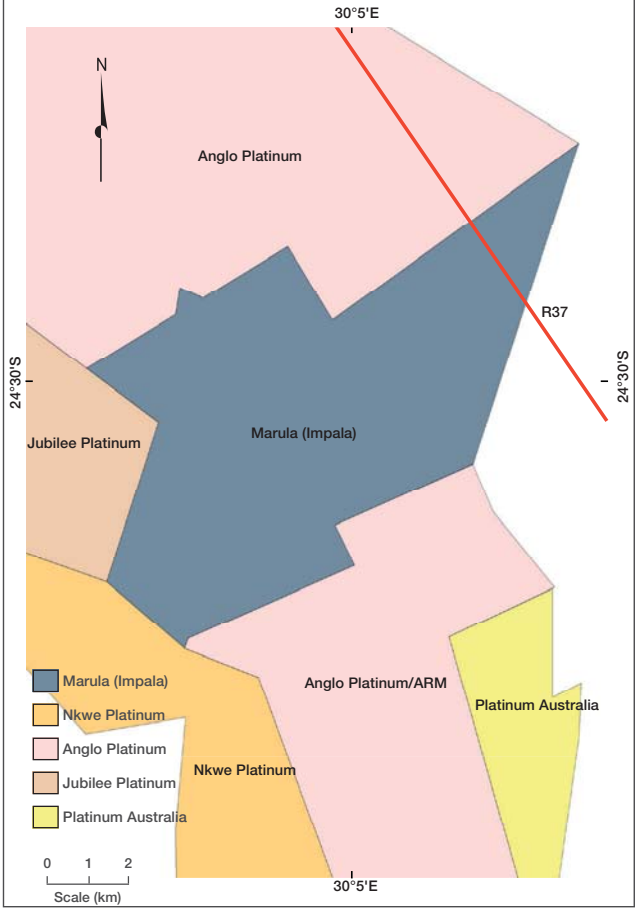
# ▷ Marula

## Marula mineral resources and mineral reserves

The Marula mining operation is located on the eastern limb of the Bushveld Complex, some 35km north-west of Burgersfort. The operation is located between Modikwa Mine, which is an Anglo Platinum/ARM Joint Venture, and the Anglo Platinum Twickenham Mine. Marula holds two contiguous mining rights and a prospecting right covering 5 494ha across the farms Winnaarshoek and Clapham, and portions of the farms Driekop, Forest Hill and Hackney. Marula also has a royalty agreement with Modikwa Platinum Mine which allows limited mining on an area adjacent to the Driekop Shaft. These mineral resources and mineral reserves have not been reflected in the current statement as ownership still rests with Modikwa. Implats has an effective 73% interest in Marula with each of the three empowerment groupings (Mmakau Mining, the Marula Community Trust and Tubatse Platinum) holding a 9% interest.

Both the Merensky and UG2 Reefs are present but only the UG2 is currently exploited. The geological succession is broadly similar to that of the western limb. The UG2 Reef is defined as a main chromitite layer, with most of the mineralisation confined to this unit, followed by a poorly mineralised pegmatoidal footwall. The Merensky Reef is the upper portion of a pyroxenite layer, with a chromitite stringer close to the hangingwall contact. Mineralisation peaks over the chromitite stringer and decreases into the hangingwall and footwall. Both mineralised horizons sub-outcrop on the Marula mining rights area and dip in a west-southwest direction at 12° to 14°. The vertical separation between the Merensky and UG2 Reefs averages 400m. The reefs are relatively undisturbed by

### Marula locality map showing surrounding mineral rights areas



faults and dykes with one major dyke traversing the mining area. Potholes represent the majority of the geological losses encountered underground, while a dunite pipe also disrupts the reef horizons. These geological features are accounted for in the mineral resource and mineral reserve statements as geological losses.

Marula Mine has two decline shaft systems. Driekop Shaft is exploiting the UG2 Reef by means of a hybrid mining method, while at Clapham Shaft, both a hybrid and conventional mining method are currently being used to exploit the UG2 Reef.

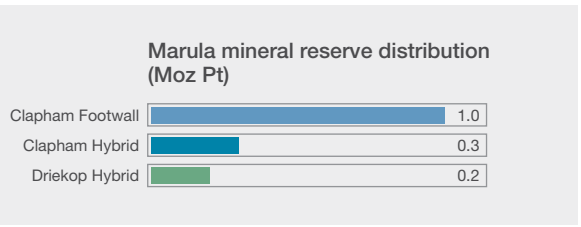
For the two hybrid sections, all main development is done on reef, and the stoping is carried out through conventional single-sided breast mining from a centre gully. Panel face lengths are approximately 16m to 24m, with panels being separated by 6 x 4m grid pillars with 2m ventilation holings. The stoping width averages 1.4m.

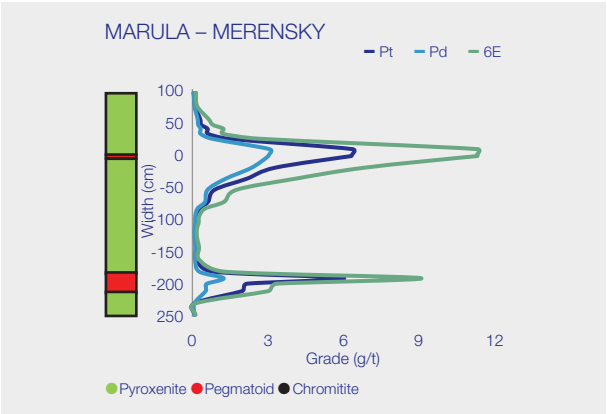
For the conventional operation, the footwall drives are developed on strike approximately 25m below the reef horizon with cross-cut breakaways about 220m apart. This development is undertaken with drill rigs and dump trucks. Panel lengths are approximately 24m. Stope face drilling takes place with hand-held pneumatic rock drills with air legs.

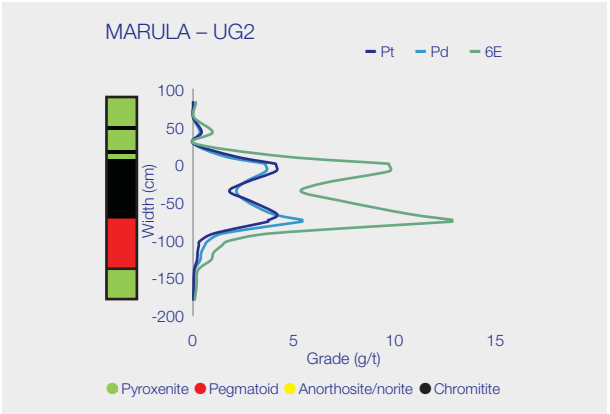
Mine design and scheduling of the operational shafts is carried out utilising CadsMine™ software. Geological models and ore blocks are updated and validated using G-Blocks and boundaries in the MRM information system. Grade block models are developed utilising Isatis™ software. The mine design and scheduling for the first five years is done in detail – monthly per crew. Thereafter, yearly rates are applied. The planning sequence is presently under review.

The spread of mineral reserves over the three mining sections is depicted below. The majority of the mineral reserves (67%) is located in the Clapham footwall section.

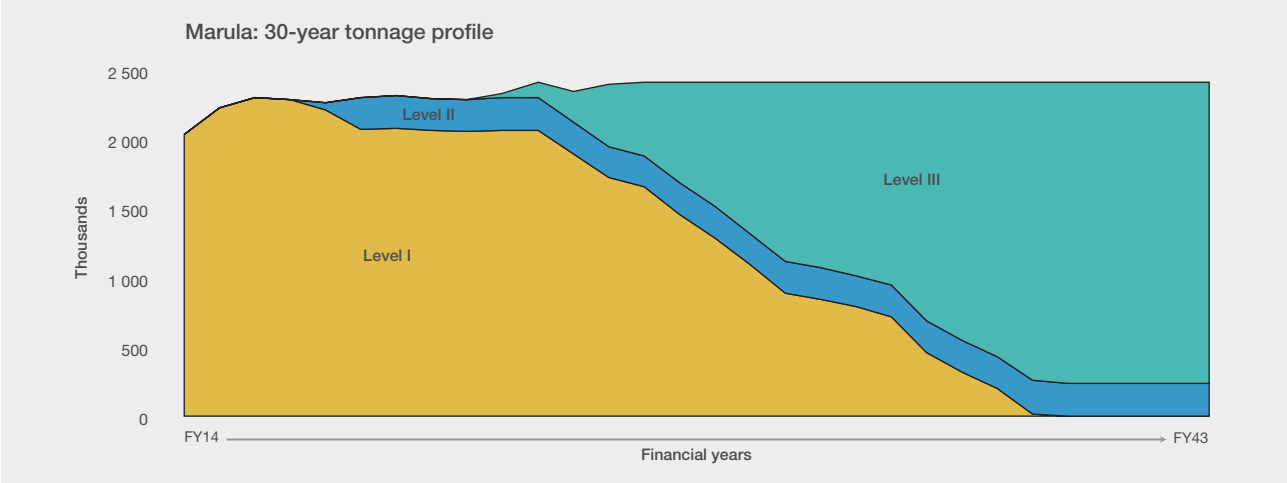
The LoM I encompasses the UG2 Reef Clapham hybrid, Clapham conventional up to 4 Level, Driekop hybrid and Driekop Extension areas. This will take the mine to a sustainable production level of 2Mt per annum until 2018. Maintaining the profile after 2017 is the subject of ongoing studies to optimise the LoM II and LoM III in the 30-year LoM profile. The comparison between the mineral resource statement and the 30-year LoM profile clearly illustrates its potential to expand operations in future if economically viable. Note that the indicative LoM profile is based on a range of assumptions which could change in future.



# Mineral resources and mineral reserves
/ **Marula** / continued




## Marula mineral resources and mineral reserves (100%)
as at 30 June 2013

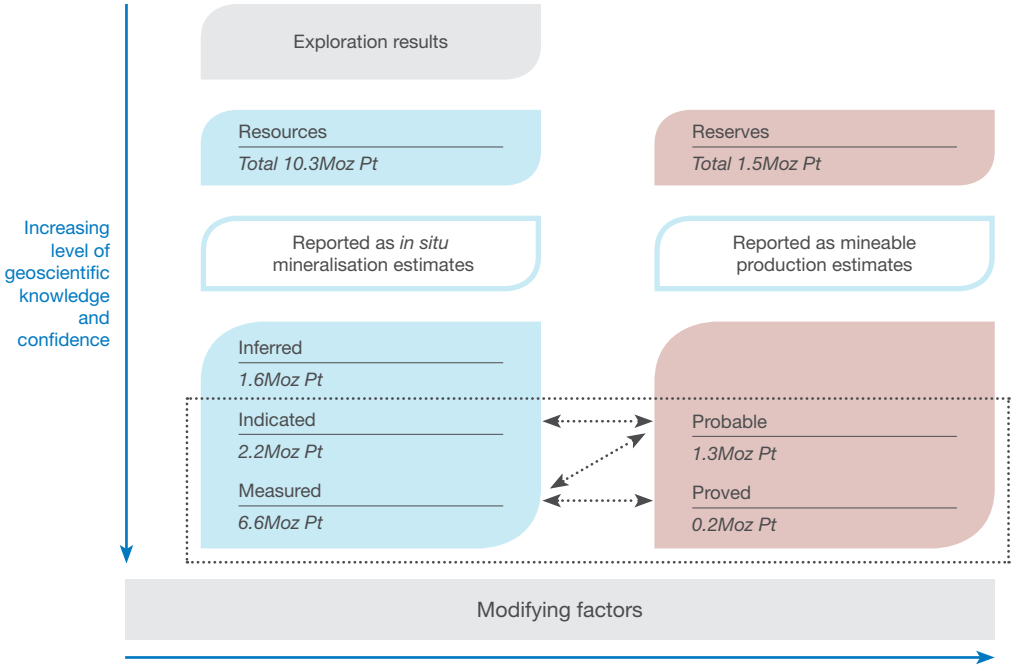
| Mineral resources | | as at 30 June 2013 | | | | | | | as at 30 June 2012 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Orebody | Category | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | 4E Moz | 6E Moz | Pt Moz | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | 4E Moz | Pt Moz |
| **Merensky** | Measured | 34.3 | 100 | 4.24 | 4.55 | 4.7 | 5.0 | 2.7 | 34.3 | 100 | 4.24 | 4.55 | 4.7 | 2.7 |
| | Indicated | 7.7 | 100 | 4.26 | 4.54 | 1.1 | 1.1 | 0.6 | 7.7 | 100 | 4.26 | 4.54 | 1.1 | 0.6 |
| | Inferred | 9.9 | 100 | 4.16 | 4.46 | 1.3 | 1.4 | 0.8 | 9.9 | 100 | 4.16 | 4.46 | 1.3 | 0.8 |
| **UG2** | Measured | 31.4 | 58 | 8.58 | 10.09 | 8.7 | 10.2 | 3.8 | 32.2 | 58 | 8.71 | 10.07 | 9.0 | 3.9 |
| | Indicated | 12.4 | 62 | 8.75 | 10.30 | 3.5 | 4.1 | 1.5 | 12.5 | 61 | 8.85 | 10.32 | 3.6 | 1.6 |
| | Inferred | 6.2 | 60 | 8.74 | 10.33 | 1.7 | 2.1 | 0.8 | 6.2 | 59 | 8.86 | 10.33 | 1.8 | 0.8 |
| | **Total** | **102.0** | | **6.40** | **7.30** | **21.0** | **23.9** | **10.3** | **102.8** | | **6.47** | **7.32** | **21.4** | **10.3** |

| Mineral reserves | | as at 30 June 2013 | | | | | | | as at 30 June 2012 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Orebody | Category | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | 4E Moz | 6E Moz | Pt Moz | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | 4E Moz | Pt Moz |
| **UG2** | Proved | 2.9 | 165 | 4.07 | 4.72 | 0.4 | 0.4 | 0.2 | 2.4 | 165 | 3.93 | 4.55 | 0.3 | 0.1 |
| | Probable | 23.3 | 162 | 4.05 | 4.70 | 3.0 | 3.5 | 1.3 | 23.8 | 166 | 4.05 | 4.70 | 3.1 | 1.4 |
| | **Total** | **26.2** | | **4.05** | **4.70** | **3.4** | **4.0** | **1.5** | **26.2** | | **4.04** | **4.69** | **3.4** | **1.5** |

## Comparison between mineral resource estimate for the UG2 chromitite layer and the estimate for the UG2 Reef at minimum mining width

| Mineral resources | | Minimum mining width as at 30 June 2013 | | | | | | | UG2 chromitite layer as at 30 June 2013 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Orebody | Category | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | 4E Moz | 6E Moz | Pt Moz | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | 4E Moz | 6E Moz | Pt Moz |
| UG2 | Measured | 48.1 | 95 | 6.09 | 7.18 | 9.4 | 11.1 | 4.2 | 31.4 | 58 | 8.58 | 10.09 | 8.7 | 10.2 | 3.8 |
| | Indicated | 19.2 | 102 | 6.15 | 7.26 | 3.8 | 4.5 | 1.7 | 12.4 | 62 | 8.75 | 10.30 | 3.5 | 4.1 | 1.5 |
| | Inferred | 9.6 | 99 | 6.30 | 7.43 | 1.9 | 2.3 | 0.9 | 6.2 | 60 | 8.74 | 10.33 | 1.7 | 2.1 | 0.8 |
| | **Total** | **76.9** | | **6.13** | **7.23** | **15.2** | **17.9** | **6.7** | **50.1** | | **8.64** | **10.17** | **13.9** | **16.4** | **6.2** |

## Relationship between exploration results, mineral resources and mineral reserves (100%)

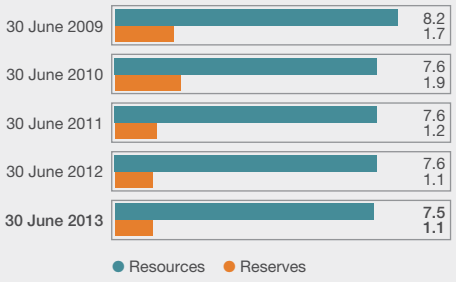


# Mineral resources and mineral reserves
/ **Marula** / continued

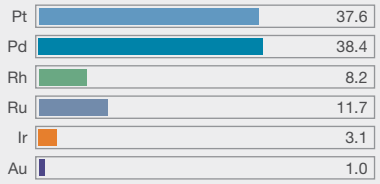
## Notes

- The statement reflects total estimates for Marula as at 30 June 2013; corresponding estimated attributable mineral resources and reserves are summarised elsewhere in this report
- Mineral resources are quoted inclusive of mineral reserves
- Mineral reserves quoted reflect the width and grade delivered to the mill rather than an *in situ* channel grade quoted in respect of the mineral resources
- The modifying factors used in the UG2 mineral reserve calculation are based on the mine plan which envisages hybrid and conventional breast mining operations
- Estimated geological losses have been accounted for in the mineral resource calculation
- The UG2 mineral resource accounts for the main chromitite layer channel width only, without consideration of dilution. A separate table is included this year to reflect the comparative minimum mining width resource cut. Notably this shows a lower grade but with similar content
- Grade estimates were obtained by means of ordinary kriging of borehole intersections
- No additional work was done on the Merensky mineral resource estimation during the year and the same statement is reported as in 2011 and 2012
- Changes in the UG2 mineral resource estimates since last year reflect an updated estimation using additional data and some adjustment of extraction rates
- The mineral resources and mineral reserves are reflected in both 4E and 6E formats
- Rounding of numbers may result in minor computational discrepancies. Mineral resource estimates are inherently imprecise in nature and the results tabulated in this report must be read as estimates and not as calculations; inferred mineral resources in particular are qualified as approximations.

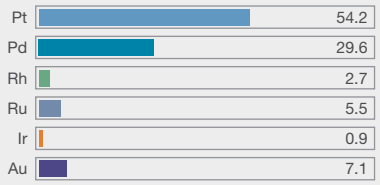
**Marula attributable mineral resources and mineral reserves (Moz Pt)**



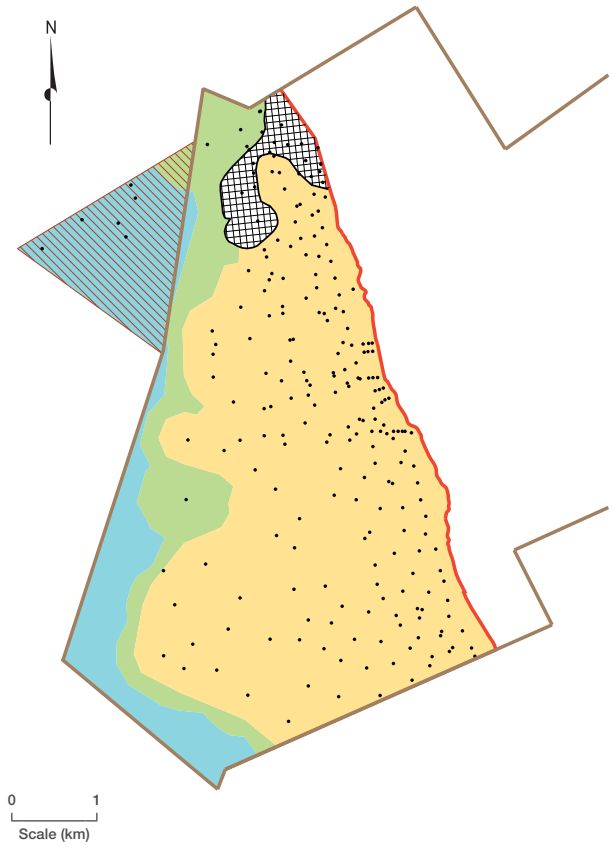

**Marula UG2 6E metal ratio (%)**




**Marula Merensky 6E metal ratio (%)**

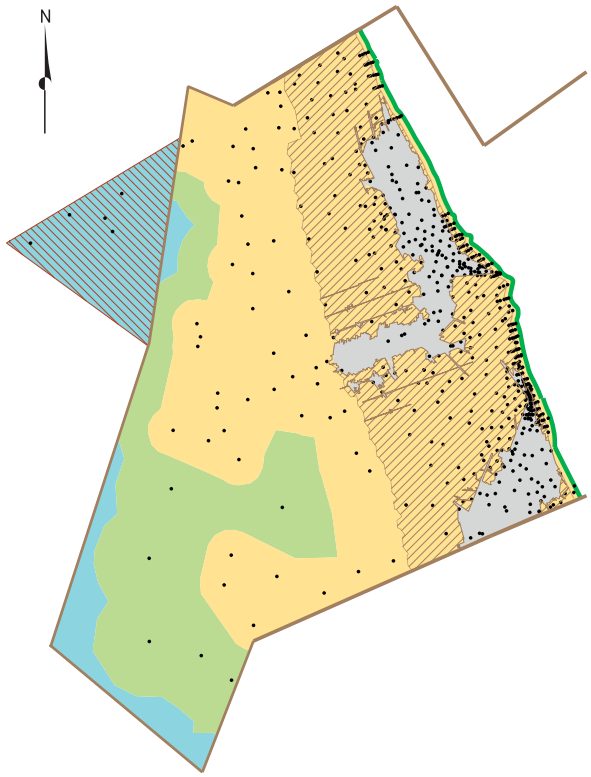


## Marula Merensky Reef mineral resources




- Boreholes
- Measured mineral resource
- Indicated mineral resource
- Inferred mineral resource
- Prospecting right
- Major geological features
- Merensky sub-outcrop
- Mining right boundary

## Marula UG2 Reef mineral resources and mineral reserves




- Boreholes
- Mined-out areas
- Measured mineral resource
- Indicated mineral resource
- Inferred mineral resource
- Prospecting right
- UG2 sub-outcrop
- Mining right boundary
- Mineral reserve

# Mineral resources and mineral reserves
## / Afplats, Imbasa and Inkosi /

# ▷ Afplats, Imbasa and Inkosi

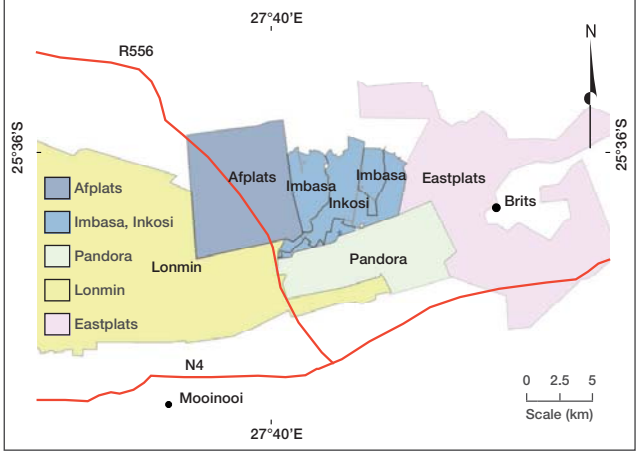
## Afplats, Imbasa and Inkosi mineral resources

Afplats' Leeuwkop Project and adjacent prospecting right areas of Imbasa and Inkosi are located 10km west of Brits on the western limb of the Bushveld Complex as shown in the locality map adjacent. Since the dissolution of Afplats Plc., the Imbasa and Inkosi prospecting rights are held by Impala together with the joint venture partners. The mineral resources of the three areas are therefore reported separately to reflect this ownership. The extent of the different areas are:

| | Mining right (ha) | Pros-pecting right (ha) | Implats' interest (%) |
|---|---|---|---|
| **Afplats** | 4 602 | 1 064 | 74 |
| **Imbasa** | | 1 673 | 60 |
| **Inkosi** | | 2 593 | 49 |

Both the Merensky and UG2 Reefs have been extensively explored but only the UG2 Reef is currently considered to be economically exploitable. The UG2 Reef comprises a main and upper chromitite layer separated by a narrow pyroxenite parting. This will be exploited as a single package. The Merensky Reef is the upper portion of a pyroxenite layer, with a chromitite stringer close to the hangingwall contact. Mineralisation peaks over the chromitite stringer and decreases into the hangingwall and footwall.

**Locality map showing Afplats, Imbasa and Inkosi relative to surrounding mineral rights areas**



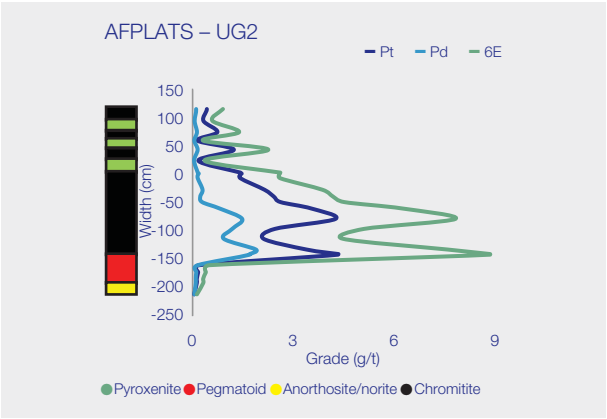

The UG2 Reef occurs about 1 050m below surface at the southern boundary of the farm Leeuwkop. The vertical separation between the Merensky and UG2 Reefs averages 200m and both reefs dip northwards at 9°. Mine development was deferred from 2009 until 2011. During 2012, shaft sinking operations were initiated at the Main Shaft only, given the prevailing market conditions. The mineral resource has therefore not been reclassified to the reserve category pending the full project approval and funding in accordance with the Implats practice.

The indicative LoM profile for the Leeuwkop Project is included, this is under review given the present cash constraints.


## Afplats, Imbasa and Inkosi mineral resources (100%)

as at 30 June 2013

| Mineral resources | | as at 30 June 2013 | | | | | | | as at 30 June 2012 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Orebody | Category | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | 4E Moz | 6E Moz | Pt Moz | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | 4E Moz | Pt Moz |
| Afplats UG2 | Measured | 79.2 | 132 | 5.22 | 6.48 | 13.3 | 16.5 | 8.1 | 79.3 | 132 | 5.29 | 6.57 | 13.5 | 8.2 |
| | Indicated | 14.3 | 135 | 5.05 | 6.28 | 2.3 | 2.9 | 1.4 | 14.1 | 133 | 5.30 | 6.57 | 2.4 | 1.5 |
| | Inferred | 99.7 | 130 | 5.01 | 6.25 | 16.1 | 20.0 | 9.8 | 99.6 | 132 | 5.06 | 6.28 | 16.2 | 9.9 |
| | **Total Afplats** | **193.2** | | **5.10** | **6.35** | **31.7** | **39.4** | **19.3** | **193.0** | | **5.17** | **6.42** | **32.1** | **19.6** |
| Imbasa UG2 | Indicated | 25.8 | 135 | 4.59 | 5.76 | 3.8 | 4.8 | 2.3 | 12.8 | 131 | 4.46 | 5.61 | 1.8 | 1.1 |
| | Inferred | 42.2 | 142 | 4.52 | 5.69 | 6.1 | 7.7 | 3.8 | 50.2 | 137 | 4.63 | 5.83 | 7.5 | 4.6 |
| Inkosi UG2 | Indicated | 65.8 | 134 | 4.86 | 6.12 | 10.3 | 12.9 | 6.3 | 33.1 | 135 | 5.14 | 6.41 | 5.5 | 3.3 |
| | Inferred | 39.2 | 139 | 4.62 | 5.84 | 5.8 | 7.4 | 3.6 | 63.2 | 132 | 4.89 | 6.15 | 9.9 | 6.1 |
| **Total Imbasa/Inkosi** | | **173.0** | | **4.68** | **5.90** | **26.0** | **32.8** | **16.0** | **159.2** | | **4.83** | **6.06** | **24.7** | **15.2** |
| **Total (Afplats, Imbasa, Inkosi)** | | **366.1** | | **4.90** | **6.13** | **57.7** | **72.2** | **35.3** | **352.2** | | **5.02** | **6.26** | **56.8** | **34.8** |

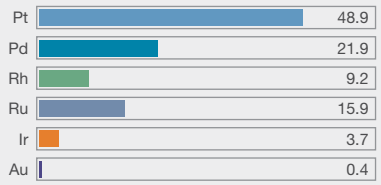


# Mineral resources and mineral reserves
## / **Afplats, Imbasa and Inkosi** / continued

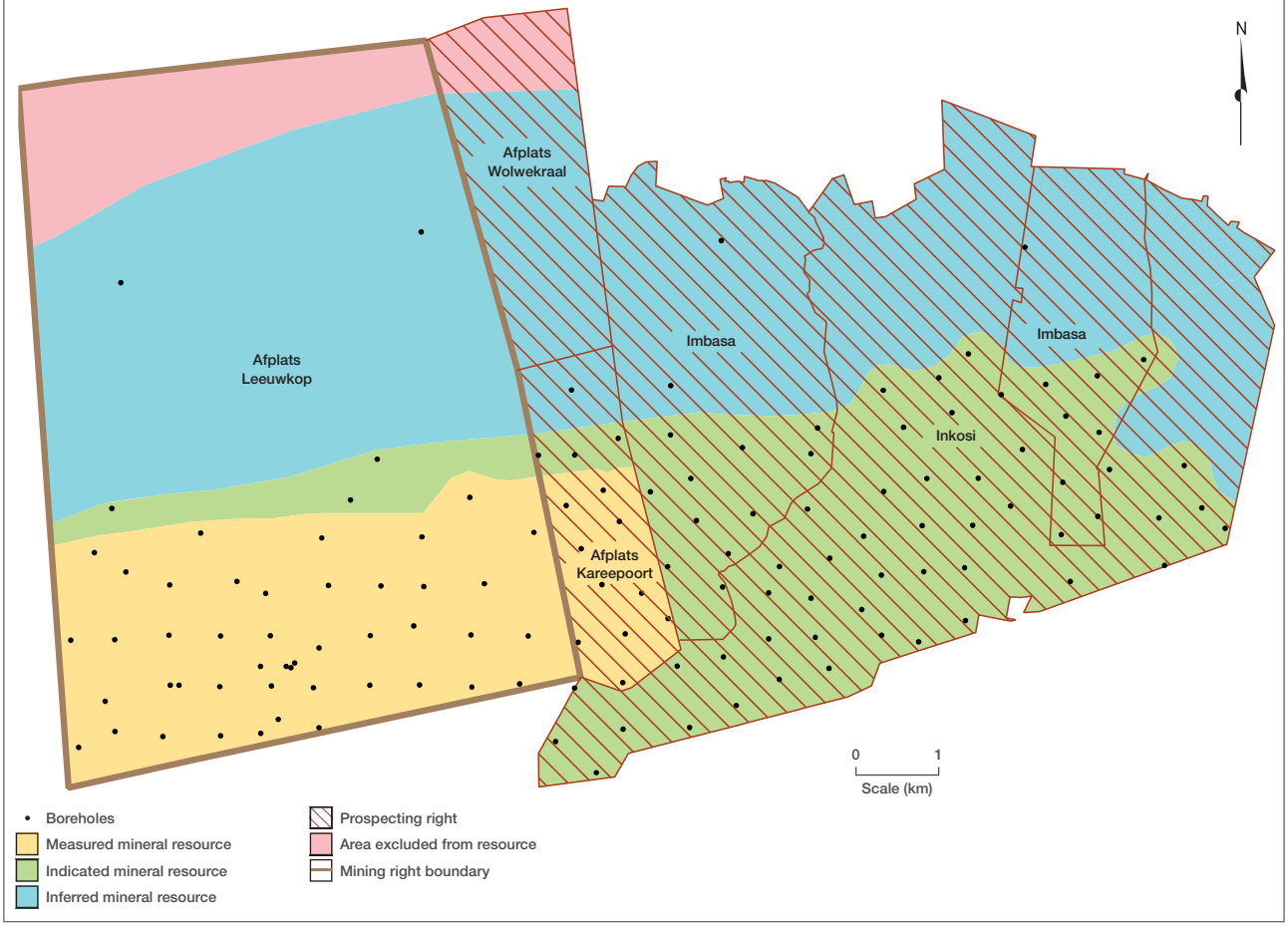
### Notes

- The statement above reflects the total estimate for the Afplats, Imbasa and Inkosi areas; the attributable mineral resources are reported in the summary sections
- Implats has chosen not to publish Merensky Reef mineral resource estimates as the eventual economic extraction is presently in doubt
- Since last year 25 boreholes were added to the estimation; 16 on Inkosi, six on Imbasa and three at Kareepoort (prospecting area of Afplats)
- The estimate has been conducted using the Isatis™ software and the standard layer format used at Marula has been introduced. A multi-pass search was used for the estimation, as recommended by AMEC during the 2012 audit. Capping of extreme values was applied for UG2 Reef data
- Estimated geological losses have been accounted for in the mineral resource calculation
- There is no material change in the UG2 Reef mineral resource estimate since the previous statement
- Notably there has been an increase in the confidence of the estimate, particularly at Inkosi where a larger area has now been classified as indicated mineral resources
- The mineral resources are reflected in both 4E and 6E formats
- Rounding of numbers may result in minor computational discrepancies; mineral resource estimates are inherently imprecise in nature; the results tabulated in this report must be read as estimates and not as calculations; inferred mineral resources in particular are qualified as approximations.

**Afplats, Imbasa and Inkosi**
**UG2 6E metal ratio (%)**




### Afplats, Imbasa and Inkosi UG2 mineral resources



*Impala Refineries*

# Mineral resources and mineral reserves
/ **Two Rivers** /

# ▷ Two Rivers

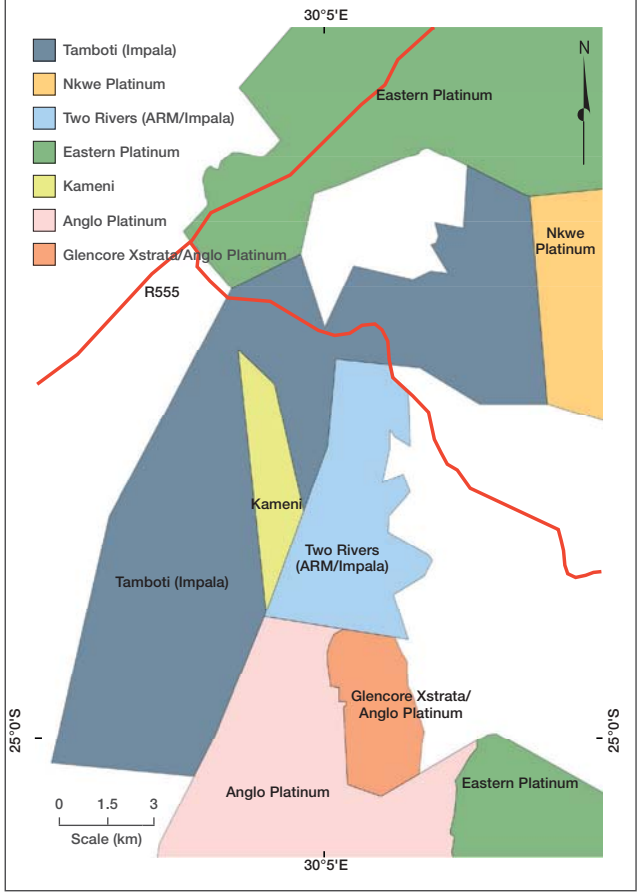
## Two Rivers mineral resources and mineral reserves

Two Rivers is located on the eastern limb of the Bushveld Complex, some 35km south-west of Burgersfort. The location is shown in the adjacent map. Two Rivers holds a contiguous old-order mining right over 2 296ha on a portion of the farm Dwarsrivier. The conversion to a new-order mining right was executed during the past year. The operation is managed by ARM and Implats has a 45% stake in the joint venture. Agreement has been reached to incorporate portions 4, 5 and 6 of the adjoining farm, Kalkfontein, into the mining area. When this happens, Implats' effective interest will increase to 49%.

Both the Merensky and UG2 Reefs are present but only the UG2 is currently exploited. The UG2 Reef outcrops in the Klein Dwarsrivier valley over a north-south strike of 7.5km and dips to the west at 7° to 10°. The vertical separation between the Merensky and UG2 Reefs is around 140m. Due to the extreme topography, the Merensky Reef outcrops further up the mountain slope. The topography also means that the UG2 occurs at 935m below surface on the western boundary.

The geological succession is broadly similar to Marula and to the western limb of the Bushveld Complex. Three distinct reef types have been defined for the UG2 Reef, namely the "normal" reef with a thick main chromitite layer; a "split" reef characterised by an internal pyroxenite/norite lens within the main chromitite layer; and a "multiple split" reef with numerous pyroxenite/norite lenses occurring within the main chromitite layer. The multiple split reef predominates in the southern portion of the mining area.

**Two Rivers locality map showing surrounding mineral rights areas**



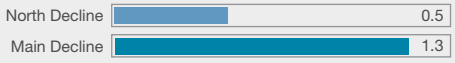
The Merensky Reef is a pyroxenite layer with a chromitite stringer close to the hangingwall contact and also at the basal contact. Mineralisation is primarily associated with the upper and lower chromitite stringers. The grade profiles at Two Rivers are generally similar to that at the adjoining Tamboti Project. The graphical illustration of the profiles is shown in the Tamboti section.

The UG2 orebody is accessed via two decline shaft systems situated 3km apart, namely the Main Decline and the North Decline. Reef production is through a fully mechanised bord and pillar stoping method. A mining section consists of eight 12m bords, with pillar sizes increasing with depth below surface. In the shallow areas up to 100m below surface, the pillars are 6m x 6m in size. The rooms are mined mainly on strike. The mine scheduling of the two declines is done in Mine 2-4D™. A 3D geological model with layer grades and widths per stratigraphic unit is utilised. The schedule is evaluated against the grade and thickness block model. The three distinct reef types impact significantly on the mine plan. Dilution calculations are based on the specific reef type and pay limits are applied to the final mining cut. Hangingwall and footwall over break, percentage off-reef, ore remaining (mining losses), geological losses (potholes, faults, dykes and replacement pegmatoid) and a shaft call factor are applied to the planned areas to generate the tonnage and grade profiles.

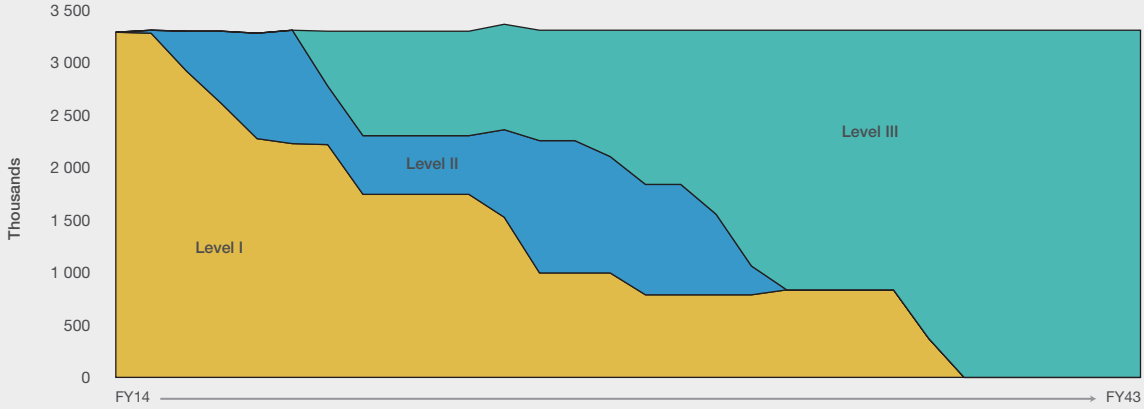
The larger portion of the mineral reserves (71%) is located in the Main Decline section.

Limited trial mining has been undertaken in 2012 on the Merensky Reef. This is on hold as full-scale mining of the Merensky Reef is not viable at present. The 30-year profile of Two Rivers Mine is shown. LoM I constitutes production from the Main and North Decline shafts. LoM III has been restated as per the previous year pending the completion of ongoing feasibility study work. LoM II is an extension of the Main and North Decline infrastructure into the Kalkfontein block. This is awaiting regulatory approvals. The profile is based on assumptions and may change in future.

**Two Rivers mineral reserve distribution (Moz Pt)**




**Two Rivers: 30-year tonnage profile**



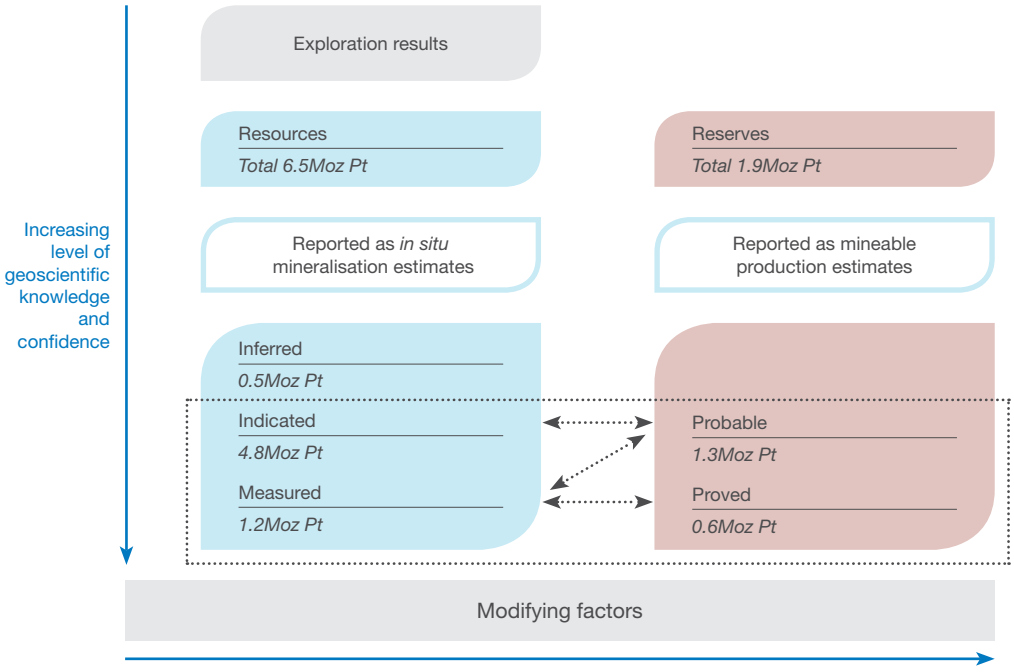
# Mineral resources and mineral reserves
/ **Two Rivers** / continued

## Two Rivers mineral resources and mineral reserves (100%)
as at 30 June 2013

| Mineral resources | | as at 30 June 2013 | | | | | | | as at 30 June 2012 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Orebody | Category | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | 4E Moz | 6E Moz | Pt Moz | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | 4E Moz | Pt Moz |
| **Merensky** | Indicated | 43.1 | 256 | 2.79 | 3.04 | 3.9 | 4.2 | 2.3 | 38.2 | 245 | 2.98 | 3.17 | 3.7 | 2.1 |
| | Inferred | 11.0 | 249 | 2.43 | 2.65 | 0.9 | 0.9 | 0.5 | 10.4 | 238 | 2.81 | 2.99 | 0.9 | 0.6 |
| **UG2** | Measured | 14.1 | 143 | 4.69 | 5.66 | 2.1 | 2.6 | 1.2 | 12.5 | 150 | 4.54 | 5.45 | 1.8 | 1.0 |
| | Indicated | 40.2 | 211 | 3.44 | 4.13 | 4.4 | 5.3 | 2.5 | 45.3 | 222 | 3.58 | 4.30 | 5.2 | 2.9 |
| | **Total** | **108.4** | | **3.24** | **3.75** | **11.3** | **13.1** | **6.5** | **106.4** | | **3.40** | **3.90** | **11.6** | **6.6** |

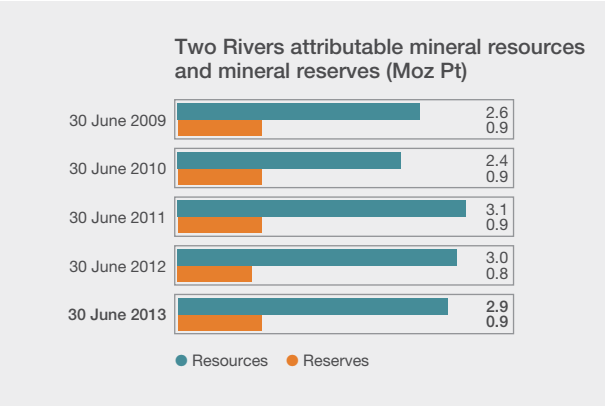
| Mineral reserves | | as at 30 June 2013 | | | | | | | as at 30 June 2012 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Orebody | Category | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | 4E Moz | 6E Moz | Pt Moz | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | 4E Moz | Pt Moz |
| **UG2** | Proved | 10.1 | 228 | 3.30 | 3.99 | 1.1 | 1.3 | 0.6 | 8.0 | 233 | 3.29 | 3.95 | 0.8 | 0.5 |
| | Proved (Stockpile) | 0.30 | | 3.27 | 4.00 | 0.0 | 0.0 | 0.0 | 0.01 | | 3.30 | 3.97 | 0.0 | 0.0 |
| | Probable | 24.7 | 275 | 2.81 | 3.39 | 2.2 | 2.7 | 1.3 | 27.2 | 277 | 2.82 | 3.40 | 2.5 | 1.4 |
| | **Total** | **35.1** | | **2.95** | **3.57** | **3.3** | **4.0** | **1.9** | **35.1** | | **2.93** | **3.53** | **3.3** | **1.9** |

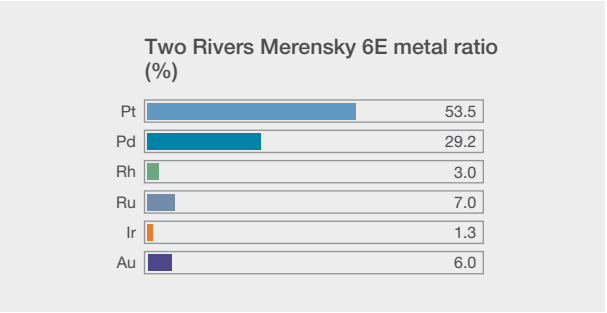
## Relationship between exploration results, mineral resources and mineral reserves (100%)

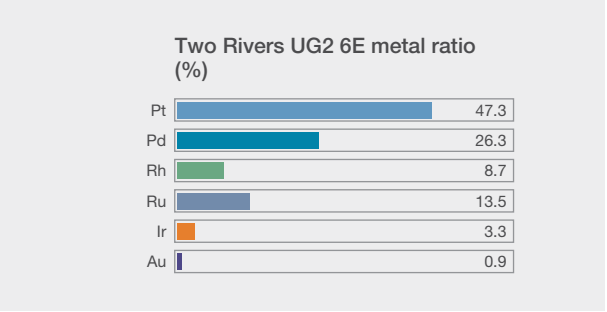


## Notes

- The statement above reflects total estimates for Two Rivers as at 30 June 2013; corresponding estimated attributable mineral resources and reserves are summarised elsewhere in this report
- Mineral resources are quoted inclusive of mineral reserves and estimated geological losses have been accounted for in the mineral resource calculation. Grade estimates were obtained by means of ordinary kriging of UG2 and Merensky Reef borehole intersections
- The UG2 mineral resource model was remodelled during 2013 due to availability of newly acquired data from 28 new boreholes which were drilled at Two Rivers Mine and the Kalkfontein portions 4, 5 and 6 areas. Total UG2 mineral resources for Two Rivers Mine decreased from 57.8Mt at 4.55g/t (6E) to 54.3 million tonnes at 4.53g/t (6E) mainly due to mining and based on a reduction in the UG2 Reef thickness in areas with underground sampling and new borehole data
- Measured UG2 Reef mineral resource tonnage increased from 12.5 to 14.1Mt due to the extension of the measured resource outline into areas with boreholes within 250m of the mining faces. The 4E grade increased from 4.54 to 4.69g/t
- Indicated UG2 Reef mineral resources decreased from 45.3 to 40.2Mt at 4.30 and 4.13g/t (6E) respectively mainly due to the reclassification of resources to measured as well as a decrease in the UG2 thickness in some areas
- The Merensky Reef was also remodelled due to newly acquired borehole data for Two Rivers Platinum Mine and Kalkfontein portions 4, 5 and 6. Indicated Merensky Reef mineral resources increased from 38.2 to 43.1Mt due to the increase in the Merensky Reef thickness as well as an increase in the Merensky Reef extent close to the reef outcrop. Grade, however, decreased from 2.98 to 2.79g/t (4E) for the indicated resource. Inferred Merensky Reef mineral resources marginally increased to 11.0Mt and grade decreased to 2.43g/t (4E)
- Mineral reserves quoted reflect the width and grade delivered to the mill rather than an *in situ* channel grade quoted in respect of the mineral resources. The modifying factors used in the UG2 mineral reserve calculation are based on the mine plan which envisages a mechanised bord and pillar layout
- The mineral resources and mineral reserves are reflected in both 4E and 6E formats
- Rounding of numbers may result in minor computational discrepancies; mineral resource estimates are inherently imprecise in nature; the results tabulated in this report must be read as estimates and not as calculations; inferred mineral resources in particular are qualified as approximations
- More details regarding the mineral resources and mineral reserves can be found in the 2013 ARM annual report.

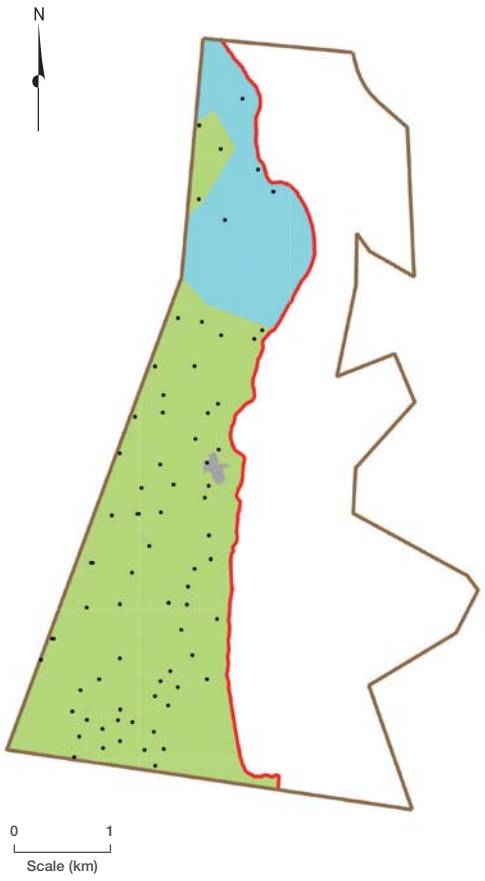


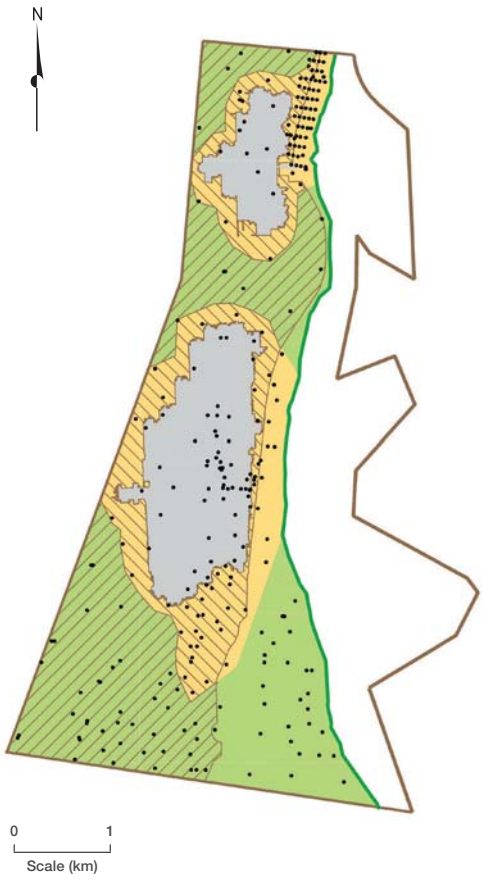
# Mineral resources and mineral reserves
/ **Two Rivers** / continued

## Two Rivers Merensky Reef mineral resources




- Boreholes
- Mined-out areas
- Indicated mineral resource
- Inferred mineral resource
- Merensky outcrop
- Mining right boundary

## Two Rivers UG2 Reef mineral resources and mineral reserves




- Boreholes
- Mined-out areas
- Measured mineral resource
- Indicated mineral resource
- Proved mineral reserve
- Probable mineral reserve
- UG2 outcrop
- Mining right boundary

*Two Rivers*

# Mineral resources and mineral reserves
## / Tamboti Project /

# ▷ Tamboti Project

## Tamboti mineral resources

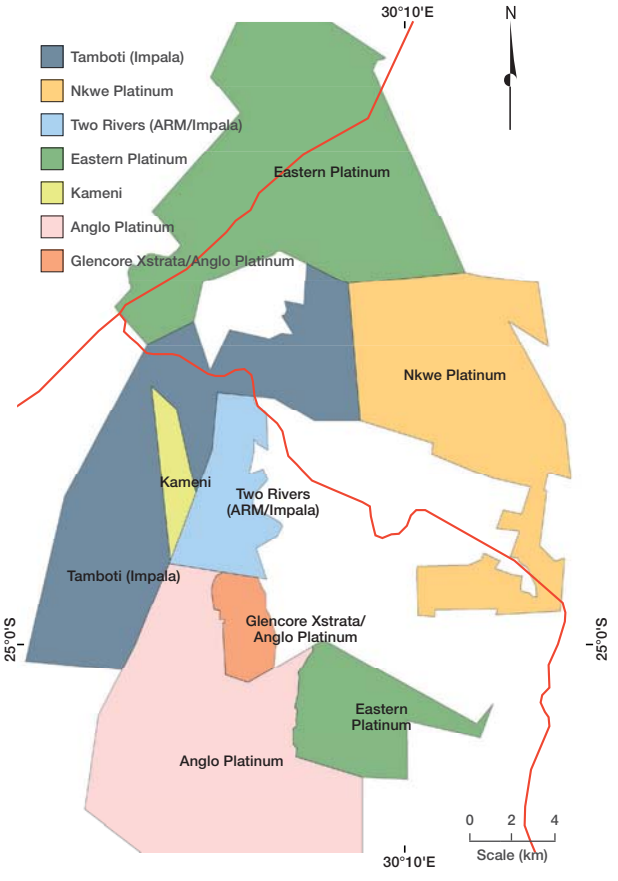
The Tamboti Project is located approximately 45km south-west of Burgersfort on the eastern limb of the Bushveld Complex, down-dip of the Two Rivers Mine. The locality is shown on the adjacent map. Impala holds a prospecting right over 8 524ha on Buffelshoek and large portions of the farms Tweefontein and Kalkfontein.

Agreements with junior resource company Kameni and with ARM over these properties were recorded in the 2009 annual report. During the past year the agreement with Kameni was terminated. Two Rivers submitted a section 102 and section 11 application in terms of the MPRDA to incorporate portions 4, 5 and 6 of Kalkfontein into the Two Rivers mining right.

Given the termination of the agreement with Kameni and the addition of data, it was decided to contract The Mineral Corporation to complete an independent SAMREC-compliant mineral resource estimate with a Competent Person's sign-off. The additional data is sourced from portions 4, 5 and 6 of the farm Kalkfontein where boreholes were drilled in conjunction with Two Rivers and also from the remainder of the same farm where Kameni drilled some 78 boreholes.

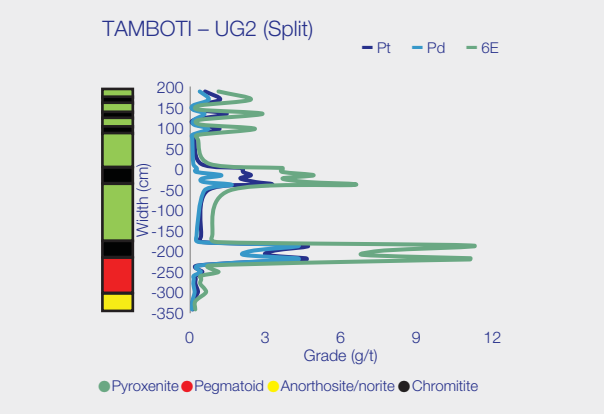
Both the Merensky Reef and underlying UG2 Reef occur at the Tamboti Project. However, no Merensky Reef is present on Tweefontein and the UG2 Reef only occurs on a small portion of this farm. The vertical separation between the Merensky Reef and UG2 Reef is around 160m. The geological succession is broadly similar to other areas of the eastern limb, at the adjacent Two Rivers operation in particular. An exception is the presence of the Steelpoortpark granite in the south-western part of the project which is unique to this area.

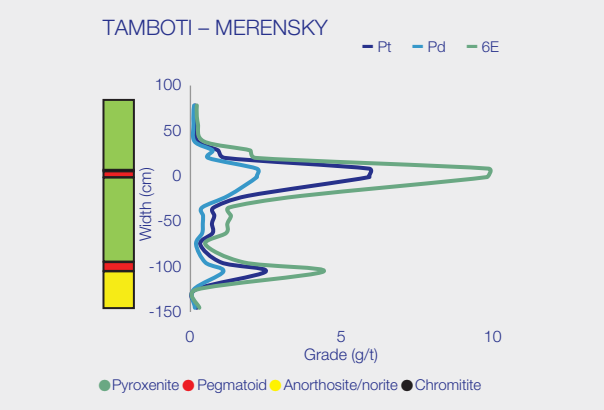
**Tamboti locality map showing surrounding mineral rights areas**

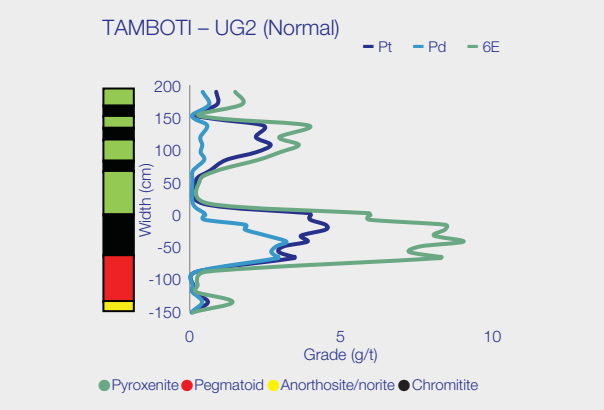


Two main distinct UG2 Reef types have been defined, namely a "normal" reef with a thick main chromitite layer and a "split" reef, characterised by an internal pyroxenite/norite lens. The Merensky Reef is the upper portion of a pyroxenite layer, with a chromitite stringer close to the contact with the hangingwall and mineralisation decreases from the chromitite stringer into the hangingwall and footwall. The Mineral Corporation identified additional facies for both the UG2 and Merensky Reefs.

The geological structure of the area is dominated by the regional north-northeast to south-southwest trending Kalkfontein fault with an apparent vertical displacement of 1 200m downthrow to the west and a lateral dextral displacement of several kilometres in the central portions of the project area. Both reefs on the eastern side of the Kalkfontein fault are folded into a south-southwest plunging asymmetric syncline, followed by a smaller anticline to the west. Dips of the limbs vary from 10° to 31°. Further to the west of the anticline, the reefs occur at a lower level, due to the combined effects of the folding and the Buffelshoek fault.




## Tamboti mineral resources (100%)

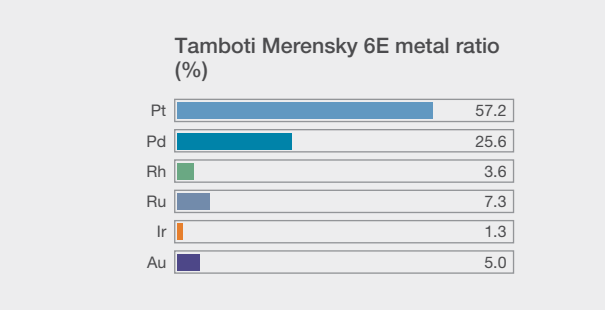
as at 30 June 2013

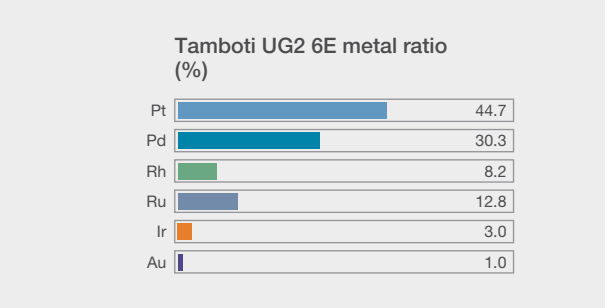
| Mineral resources | | | as at 30 June 2013 | | | | | | | as at 30 June 2012 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Orebody | Category | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | 4E Moz | 6E Moz | Pt Moz | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | 4E Moz | Pt Moz |
| KALKFONTEIN | Merensky | Indicated | 31.9 | 166 | 2.80 | 3.06 | 2.9 | 3.1 | 1.8 | | | | | | |
| | | Inferred | 49.4 | 128 | 2.74 | 2.99 | 4.3 | 4.8 | 2.7 | 72.0 | 113 | 3.43 | 3.70 | 7.9 | 4.8 |
| | UG2 | Indicated | 39.6 | 146 | 4.37 | 5.19 | 5.6 | 6.6 | 2.9 | | | | | | |
| | | Inferred | 53.2 | 113 | 4.58 | 5.44 | 7.8 | 9.3 | 4.2 | 93.6 | 116 | 5.68 | 6.82 | 17.1 | 9.3 |
| | | **Total** | **174.1** | | **3.68** | **4.25** | **20.6** | **23.8** | **11.6** | **165.7** | | **4.70** | **5.46** | **25.0** | **14.0** |
| BUFFELSHOEK | Merensky | Indicated | 7.0 | 173 | 2.83 | 3.10 | 0.6 | 0.7 | 0.4 | | | | | | |
| | | Inferred | 72.5 | 140 | 3.47 | 3.79 | 8.1 | 8.8 | 5.1 | 69.1 | 117 | 4.21 | 4.54 | 9.3 | 5.5 |
| | UG2 | Indicated | 8.7 | 133 | 4.83 | 5.74 | 1.4 | 1.6 | 0.7 | | | | | | |
| | | Inferred | 75.1 | 134 | 4.26 | 5.06 | 10.3 | 12.2 | 5.5 | 83.9 | 124 | 5.46 | 6.45 | 14.7 | 7.6 |
| | | **Total** | **163.3** | | **3.88** | **4.45** | **20.4** | **23.4** | **11.6** | **153.0** | | **4.90** | **5.59** | **24.1** | **13.0** |
| | | **Total** | **337.4** | | **3.78** | **4.35** | **41.0** | **47.2** | **23.2** | **318.7** | | **4.80** | **5.52** | **49.1** | **27.1** |

# Mineral resources and mineral reserves
/ **Tamboti Project** / continued

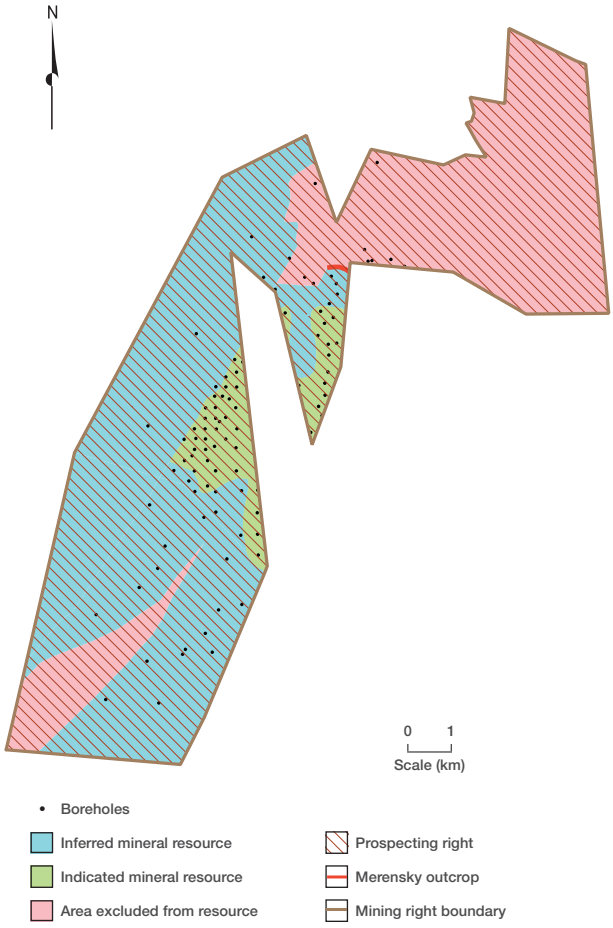
## Notes

- The statement above reflects the total estimate for the Implats Tamboti Project area as at 30 June 2013. As at this date none of the rights have been transferred to Two Rivers and these remain fully attributable to Implats
- The updated mineral resource estimate has been sourced from the independent Competent Persons' estimate completed by The Mineral Corporation
- The Mineral Corporation updated the geological and structural models. The Merensky Reef has been sub-divided into four different facies types, while the UG2 has been sub-divided into three facies types
- Consistent evaluation cut methodologies have been applied within these facies. A minimum cut of 1m and a maximum cut of 3.5m have been applied
- Geostatistical analysis has been undertaken on the accumulation of PGE (4) per unit area ($g/m^2$), tonne per unit area and thickness, over the full width of the evaluation cut. A 2D analysis was considered appropriate, given the tabular nature of the deposit, and the likely single-cut mining method which would be applied
- Ordinary and simple kriging into 250m by 250m blocks was used to estimate the variables into a block model, with maximum search distances being equal to three times the variogram range. Blocks outside of this range were estimated using the declustered mean for each facies type
- A 1.8g/t cutoff has been applied by The Mineral Corporation to the mineral resource estimate
- The updated statement is based on significantly more information in comparison with the previous report. The updated models now include recent borehole information sourced from the Kameni drilling campaign as well as from the work done on portions 4, 5 and 6 in conjunction with Two Rivers
- Estimated geological losses have been accounted for in the mineral resource calculation
- Changes in the UG2 mineral resource estimates since the previous statement show material differences in the contained metal content (platinum content reduced by some 14%); the widths and grades are also materially different. The Mineral Corporation noted that "The majority of the difference between the 2012 mineral resource estimates and the 2013 mineral resource estimates can be attributed to the exclusion of the geophysical anomaly and the difference in evaluation cut and estimation approaches. The relatively large difference between the mean grades of the boreholes and the declustered grades of the boreholes indicates that the use of borehole means (as was the case in 2012) is likely to have overestimated the metal content. Significantly more boreholes were added in the 2013 estimation compared with 2012, which reflected the mean of the limited boreholes drilled by Impala up to 2008"
- The mineral resources are reflected in both 4E and 6E formats
- Rounding of numbers may result in minor computational discrepancies. Mineral resource estimates are inherently imprecise in nature; the results tabulated in this report must be read as estimates and not as calculations; inferred mineral resources in particular are qualified as approximations.

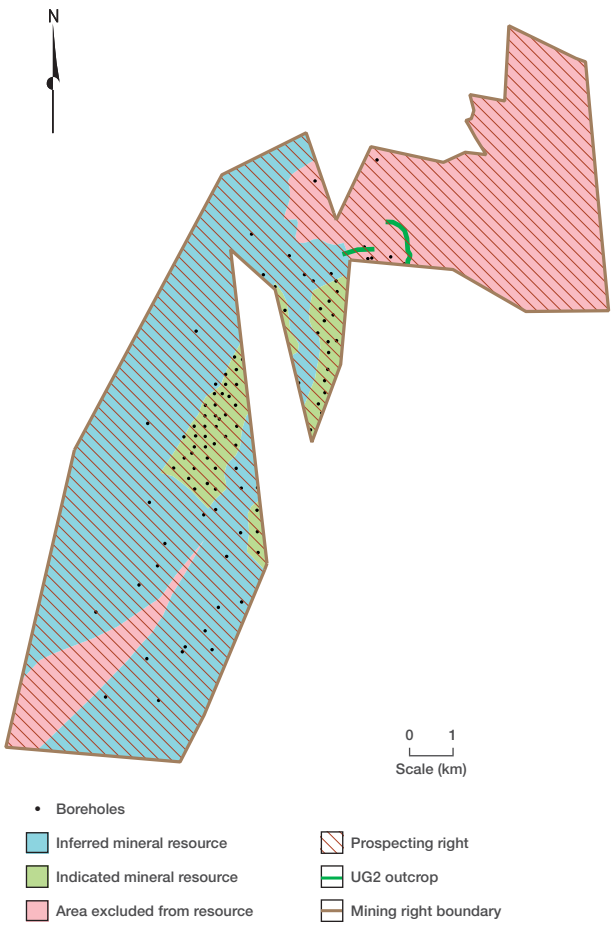


## Tamboti Merensky Reef mineral resources




## Tamboti UG2 Reef mineral resources



# Mineral resources and mineral reserves
/ **Zimplats** /

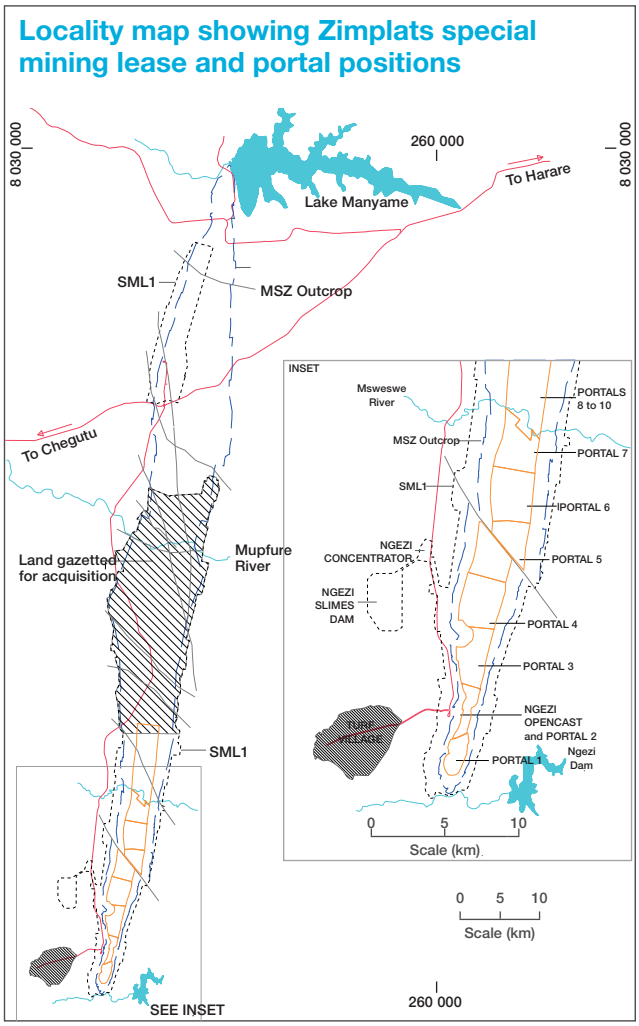
# ▷ Zimplats

## Zimplats mineral resources and ore reserves

Zimplats' Ngezi Mine is located approximately 150km south-west of Harare at the southern end of the Sebakwe sub-chamber of the Hartley Complex on the Great Dyke. The Hartley Complex is about 100km long and contains 80% of Zimbabwe's PGM resources, and Zimplats controls two-thirds of this. The dormant Hartley Mine and the Selous Metallurgical Complex are located 77km north of the Ngezi Mine in the Darwendale sub-chamber. Zimplats holds a special mining lease covering two areas totalling 48 535ha. Importantly it must be noted that as at 30 June 2013 the indigenisation transactions at both Mimosa and Zimplats have not been concluded. Once these are in place the attributable Implats mineral resources and mineral reserves could be materially reduced. The maps in this section also depict the large tract of ground in the northern portion of the Zimplats mineral lease area which the Zimbabwean government in April gazetted for so-called compulsory acquisition.

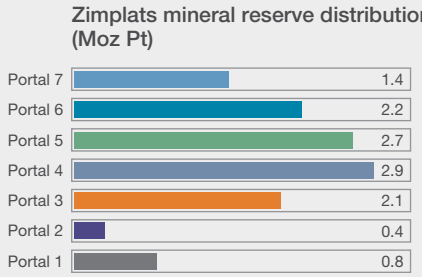
The platinum-bearing Main Sulphide Zone (MSZ) is located in the P1 pyroxenite some 10m to 50m below the ultramafic/mafic contact. The MSZ is a continuous layer, 2m to 10m thick, and forms an elongated basin. The zone strikes in a north-northeasterly trend and dips between 5° to 20° on the margins flattening towards the axis of the basin. Peak base metal and PGM values are offset vertically with palladium peaking at the base, platinum in the centre and nickel towards the top. Visual identification of the MSZ is difficult, therefore systematic monitoring supported by channel sampling is needed to guide mining.

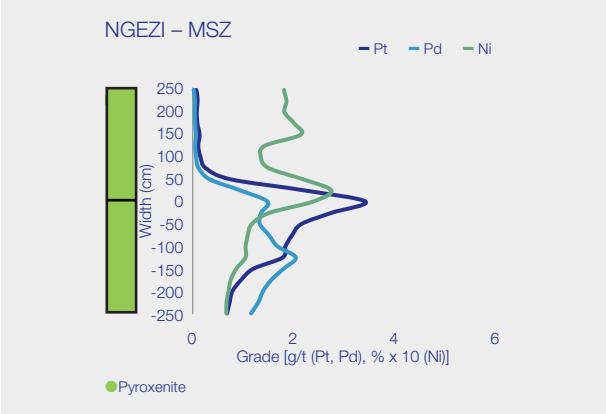
**Locality map showing Zimplats special mining lease and portal positions**

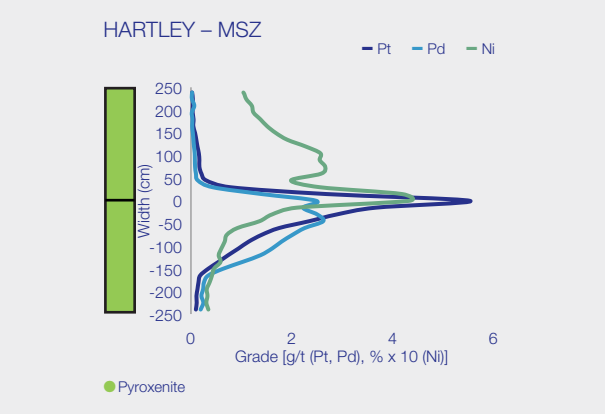


Production is presently sourced from three decline shafts or portals, with a fourth portal currently in a build-up phase. Boundaries between individual portals are usually based on major faults. Minor faults and other disrupted areas are present and are taken into account in the mineral resource and ore reserve statements as geological losses. No potholes, as experienced in the South African operations, have been identified. Open-pit strip mining at Zimplats commenced in 2002 at Ngezi. This was suspended in 2008 and all mining is presently conducted in underground sections. Zimplats employs mechanised bord and pillar mining to mine ore from stopes with a nominal width of 2.5m at dips of less than 9°. Each production team comprises a single boom face rig, a bolter, a 10t LHD and a 30t dump truck, and mines 20 panels, each 7m wide. This allows sufficient flexibility for the required grade control sampling and to negotiate faults and intrusions while still meeting the team's target of 20 000t per month. The default layout has 7m roadways with 4m square pillars, spans decrease and pillar dimensions increase in bad ground and with depth. A combination of roof bolts and tendons is integral to the support design. The mining infrastructure presently consists of decline accesses via surface portals. During the past year, all three operational portals continued to operate at full capacity: Portal 1 (Ngwarati) at 1.2Mtpa, Portal 2 (Rukodzi) at 1.2Mtpa and Portal 4 (Bimha) at 2Mtpa. Construction of the new 2Mtpa mine at Portal 3 (Mupfuti Mine) continued, with the focus on developing the capital footprint. Ore production commenced with a footprint ready for the introduction of two stoping fleets.

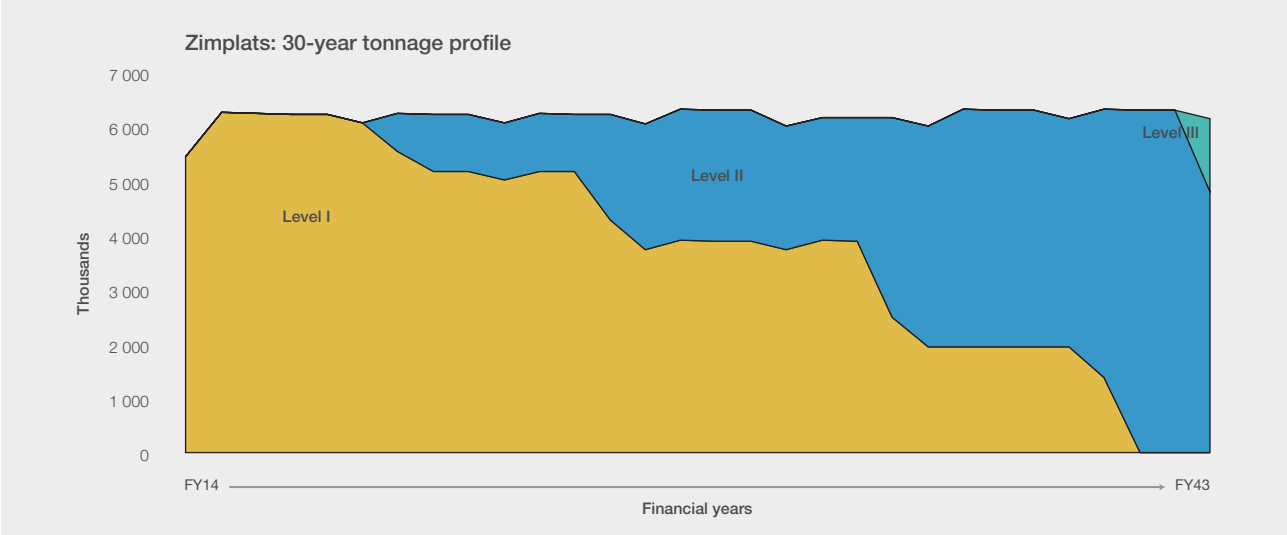
In the next five years production will increase from the current 4.7Mtpa to 6Mtpa, which is sustainable until 2042. Portals 1 to 4 constitute LoM I and portals 5 to 7 LoM II. LoM III is made up of future mining from Portal 8. The potential growth beyond the 6Mt profile is dependent on a range of technical, economic and political considerations. The LoM profile shown below is based on assumptions and may change in future. The distribution of the mineral reserves across the portals is depicted in the accompanying graph.



# Mineral resources and mineral reserves
/ **Zimplats** / continued



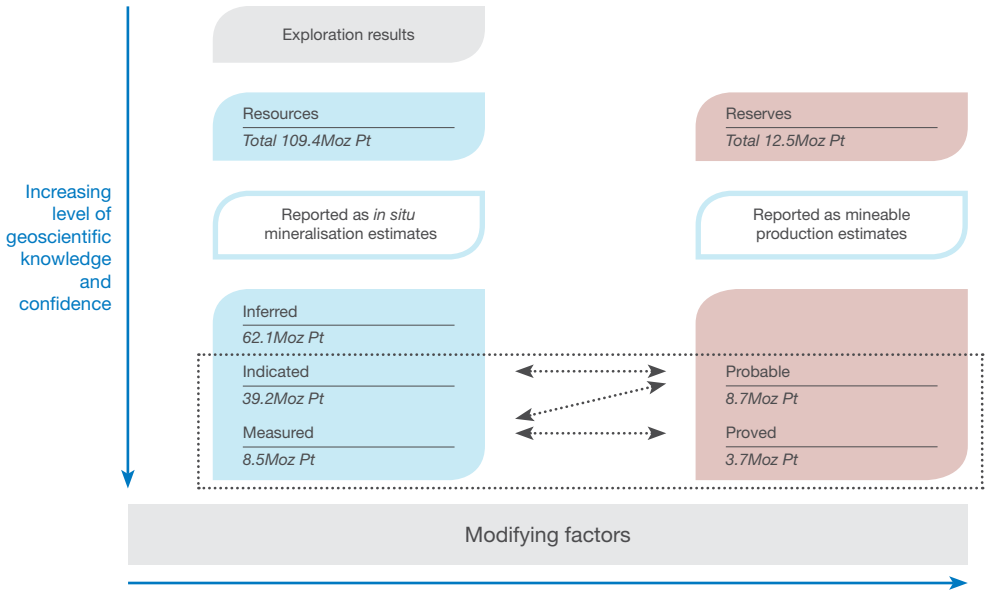

## Zimplats mineral resources and ore reserves (100%)
as at 30 June 2013

| Mineral resources | | as at 30 June 2013 | | | | | | | | | as at 30 June 2012 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Orebody | Category | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | Ni % | Cu % | 4E Moz | 6E Moz | Pt Moz | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | Ni % | Cu % | 4E Moz | Pt Moz |
| **Ngezi portals – Advanced to reserve** | | | | | | | | | | | | | | | | | | |
| MSZ | Measured | 76.7 | 250 | 3.46 | 3.66 | 0.10 | 0.08 | 8.5 | 9.0 | 4.2 | 80.0 | 250 | 3.47 | 3.67 | 0.10 | 0.07 | 8.9 | 4.5 |
| | Indicated | 213.3 | 250 | 3.47 | 3.66 | 0.11 | 0.08 | 23.8 | 25.1 | 11.9 | 212.3 | 250 | 3.49 | 3.69 | 0.11 | 0.08 | 23.8 | 11.9 |
| | **Total** | **290.0** | | **3.47** | **3.66** | **0.11** | **0.08** | **32.4** | **34.2** | **16.1** | **292.4** | | **3.49** | **3.68** | **0.11** | **0.08** | **32.8** | **16.4** |
| **Ngezi portals – Not advanced to reserve** | | | | | | | | | | | | | | | | | | |
| MSZ | Measured | 42.4 | 250 | 3.35 | 3.54 | 0.10 | 0.09 | 4.6 | 4.8 | 2.2 | 44.9 | 250 | 3.36 | 3.55 | 0.10 | 0.09 | 4.9 | 2.3 |
| | Indicated | 254.0 | 229 | 3.43 | 3.62 | 0.12 | 0.09 | 28.0 | 29.5 | 13.8 | 252.8 | 229 | 3.43 | 3.62 | 0.12 | 0.09 | 27.9 | 13.7 |
| | Inferred | 99.6 | 200 | 3.42 | 3.61 | 0.12 | 0.08 | 10.9 | 11.6 | 5.7 | 133.5 | 200 | 3.44 | 3.63 | 0.13 | 0.08 | 14.7 | 7.6 |
| | **Total** | **396.0** | | **3.42** | **3.61** | **0.12** | **0.09** | **43.5** | **45.9** | **21.7** | **431.2** | | **3.42** | **3.61** | **0.12** | **0.09** | **47.5** | **23.6** |
| **Mining lease north of Portal 10** | | | | | | | | | | | | | | | | | | |
| MSZ | Indicated | 70.0 | 192 | 3.44 | 3.70 | 0.20 | 0.18 | 7.7 | 8.3 | 3.4 | 53.8 | 127 | 4.56 | 4.80 | 0.22 | 0.18 | 7.9 | 3.6 |
| | Inferred | 1 021.0 | 239 | 3.22 | 3.50 | 0.12 | 0.09 | 105.7 | 114.9 | 50.2 | 829.1 | 183 | 3.59 | 3.79 | 0.15 | 0.13 | 95.8 | 45.1 |
| | **Total** | **1 091.0** | | **3.23** | **3.51** | **0.13** | **0.10** | **113.4** | **123.2** | **53.6** | **882.9** | | **3.65** | **3.85** | **0.15** | **0.13** | **103.7** | **48.8** |
| **Hartley** | | | | | | | | | | | | | | | | | | |
| MSZ | Measured | 28.3 | 158 | 4.53 | 4.78 | 0.14 | 0.12 | 4.1 | 4.3 | 2.0 | 28.3 | 158 | 4.53 | 4.78 | 0.14 | 0.12 | 4.1 | 2.0 |
| | Indicated | 143.1 | 189 | 3.97 | 4.19 | 0.13 | 0.11 | 18.3 | 19.3 | 9.3 | 143.1 | 189 | 3.97 | 4.19 | 0.13 | 0.11 | 18.3 | 9.3 |
| | Inferred | 46.3 | 191 | 3.89 | 4.10 | 0.13 | 0.10 | 5.8 | 6.1 | 3.0 | 46.3 | 191 | 3.89 | 4.10 | 0.13 | 0.10 | 5.8 | 3.0 |
| | **Total** | **217.7** | | **4.03** | **4.25** | **0.13** | **0.11** | **28.2** | **29.7** | **14.2** | **217.7** | | **4.03** | **4.25** | **0.13** | **0.11** | **28.2** | **14.2** |

| Mineral resources | | as at 30 June 2013 | | | | | | | | | as at 30 June 2012 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Orebody | Category | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | Ni % | Cu % | 4E Moz | 6E Moz | Pt Moz | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | Ni % | Cu % | 4E Moz | Pt Moz |
| **Oxides – all areas** | | | | | | | | | | | | | | | | | | |
| MSZ | Indicated | 16.2 | 250 | 3.42 | 3.61 | 0.10 | 0.07 | 1.8 | 1.9 | 0.9 | 16.2 | 250 | 3.42 | 3.61 | 0.10 | 0.07 | 1.8 | 0.9 |
| | Inferred | 38.3 | 217 | 3.56 | 3.76 | 0.12 | 0.10 | 4.4 | 4.6 | 2.2 | 63.5 | 219 | 3.48 | 3.67 | 0.12 | 0.10 | 7.1 | 3.5 |
| | Inferred north of Portal 10 | 21.0 | 239 | 3.17 | 3.44 | 0.12 | 0.10 | 2.1 | 2.3 | 1.0 | | | | | | | | |
| | **Total** | **75.6** | | **3.42** | **3.64** | **0.11** | **0.09** | **8.3** | **8.8** | **4.1** | **79.7** | | **3.47** | **3.66** | **0.12** | **0.10** | **8.9** | **4.4** |
| | **Overall total** | **2 070.2** | | **3.39** | **3.63** | **0.12** | **0.09** | **225.8** | **241.9** | **109.8** | **1 903.9** | | **3.61** | **3.81** | **0.13** | **0.11** | **221.0** | **107.4** |

| Ore reserves | | as at 30 June 2013 | | | | | | | | | as at 30 June 2012 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Orebody | Category | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | Ni % | Cu % | 4E Moz | 6E Moz | Pt Moz | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | Ni % | Cu % | 4E Moz | Pt Moz |
| MSZ | Proved | 70.7 | 271 | 3.34 | 3.53 | 0.10 | 0.07 | 7.6 | 8.0 | 3.7 | 66.3 | 263 | 3.36 | 3.55 | 0.10 | 0.07 | 7.2 | 3.6 |
| | Probable | 166.8 | 273 | 3.33 | 3.54 | 0.10 | 0.07 | 17.8 | 19.0 | 8.7 | 160.9 | 268 | 3.35 | 3.56 | 0.10 | 0.08 | 17.3 | 8.5 |
| | **Total** | **237.5** | | **3.33** | **3.53** | **0.10** | **0.07** | **25.4** | **27.0** | **12.5** | **227.2** | | **3.35** | **3.55** | **0.10** | **0.07** | **24.5** | **12.1** |

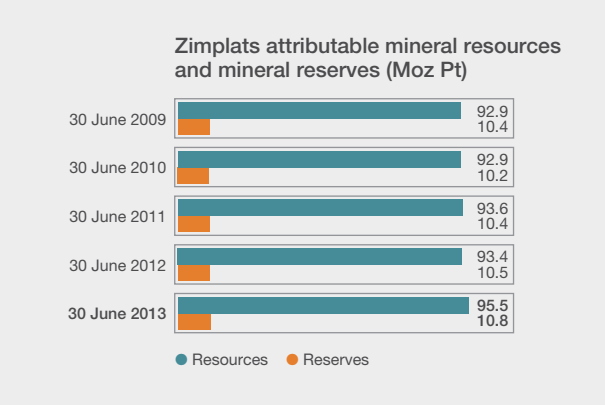
## Relationship between exploration results, mineral resources and mineral reserves (100%)

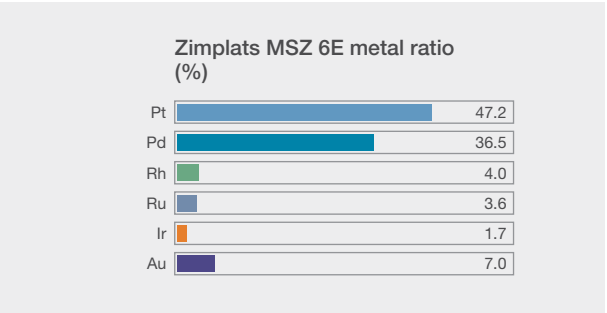


# Mineral resources and mineral reserves
/ **Zimplats** / continued

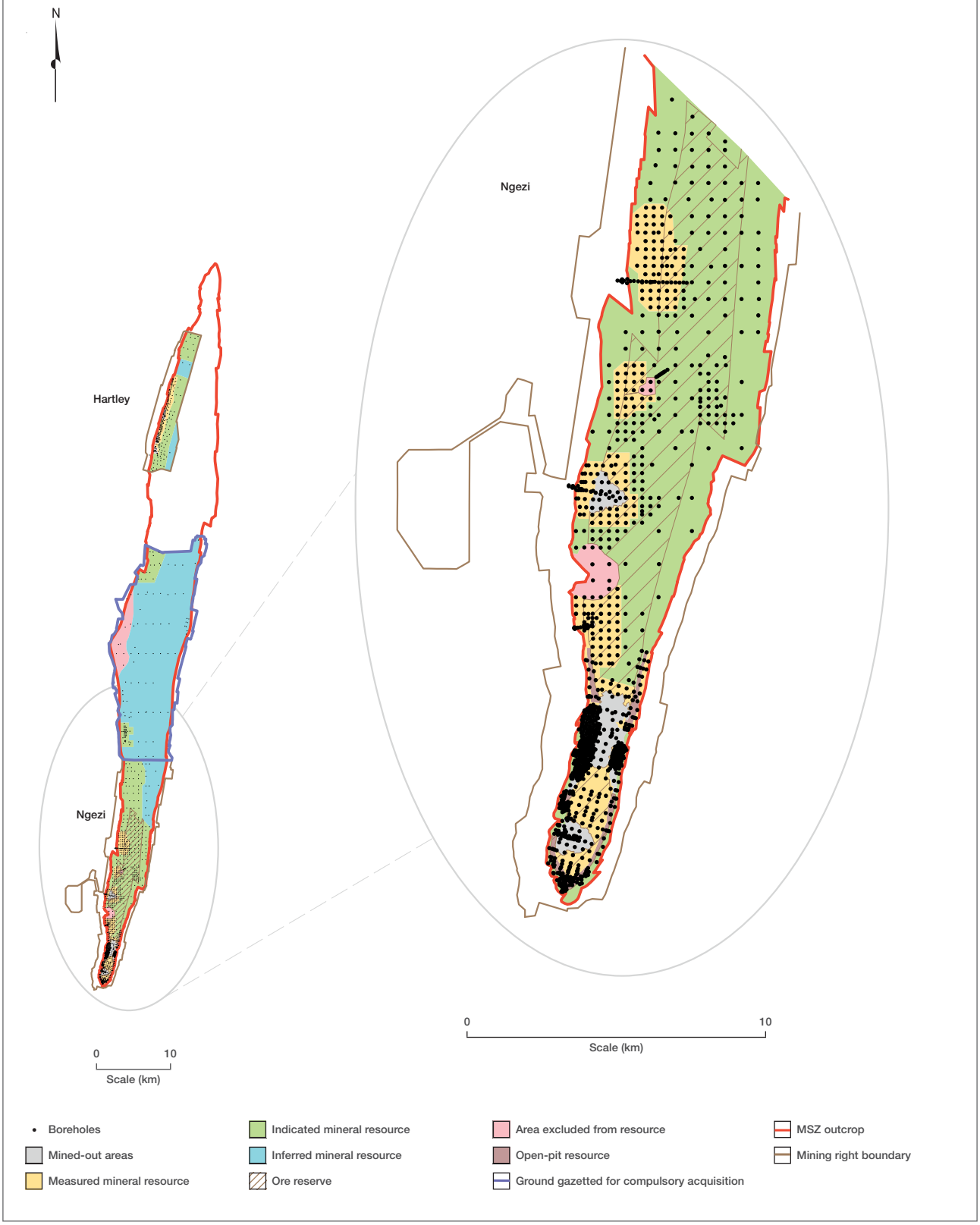
## Notes

- The statement above reflects the total mineral resource and ore reserve estimate for Zimplats as at 30 June 2013. Corresponding estimated mineral resources and ore reserves attributable to Implats are summarised elsewhere in this report
- Mineral resources are quoted inclusive of ore reserves
- A low angle shear, that has a deleterious effect on pillar strength, has been intersected in the deeper sections of Portal 4 (Bimha Mine). In the short term, steps have been taken to mitigate the safety risks. This has reduced the faces available for mining and could lead to a decrease in production from this portal. Monitoring and pillar rehabilitation efforts have been intensified and a review of the pillar design is under way. A likely increase in pillar sizes will reduce extraction percentages in areas where the shear occurs in proximity to the MSZ. The conclusions from this work will be applied across the property and may result in a reduction in ore reserve tonnages in future estimates
- Mineral resource estimates allow for estimated geological losses, while no allowance is made for anticipated support pillar losses during eventual mining
- The ore reserves quoted reflect anticipated grades delivered to the mill
- Day-to-day operations are monitored using in-house lead collection fire assays with AA finish
- The mineral resources and ore reserves in this statement are based largely on external nickel sulphide collection fire assays with ICP-MS finish. The differences between the methods are incorporated within the modifying factors that have been applied, which means that there may be slight distortions in recovery and other parameters
- Oxides have lower metallurgical recovery than sulphides with conventional technology and are currently marginal to sub-economic. Oxides are rarely sampled directly therefore some elements, particularly palladium, may be depleted relative to the figures quoted above
- Nickel grades are stated as nickel in sulphide that is amenable to recovery by flotation
- Mineral resources have been estimated using kriging techniques on data derived from surface boreholes
- Estimates are based on composite widths that vary depending on cut-off grades, which are based on appropriate economic parameters. The widths have been adjusted following the review work conducted by SRK in 2012
- The main difference in the mineral resource estimate from the 2012 statement other than depletion can be ascribed to the updated estimate conducted by AMEC that was commissioned to analyse the 2012 drilling results from the area north of Portal 10 at Zimplats, to update the mineral resource estimate and produce a supporting CPR. Although the tonnage and grade changed due to newly acquired data, the contained metal was within 5% of previous estimates
- The year-on-year increase in the ore reserve estimate relates to some shallow areas now being incorporated in the underground ore reserves and also to a review of modifying factors which resulted in an increase in the amount of dilution accounted for in the estimate
- Rounding of numbers may result in minor computational discrepancies. Mineral resource estimates are inherently imprecise in nature; the results tabulated in this report must be read as estimates and not as calculations; inferred mineral resources in particular are qualified as approximations
- More details regarding the mineral resources and ore reserves can be obtained from the 2013 Zimplats annual report.



## Zimplats MSZ mineral resources and ore reserves



# Mineral resources and mineral reserves
/ **Mimosa** /

# ▷ Mimosa

## Mimosa mineral resources and ore reserves

Mimosa is located 150km east of Bulawayo on the Wedza Complex of the Great Dyke in Zimbabwe. PGM mineralisation is located in four erosionally isolated and fault-bounded blocks, consisting from north to south of the North Hill, South Hill, Mtshingwe and Far South Hill areas. Mimosa holds contiguous mining rights over the abovementioned areas totalling 6 591ha. The operation is a 50:50 joint venture between Implats and Aquarius. The much-published indigenisation plan has not been completed and the reported attributable mineral resources and mineral reserves are still at the same ownership level of 50%.

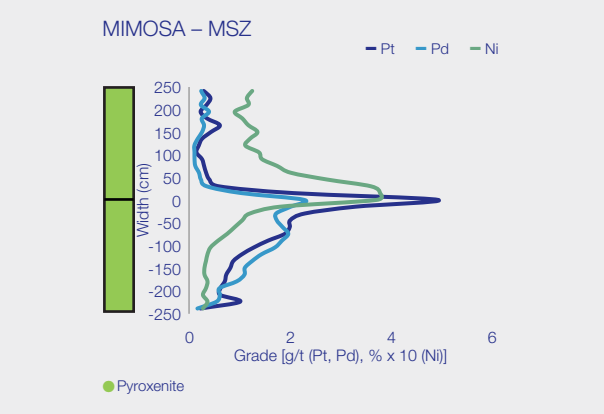
The platinum-bearing Main Sulphide Zone (MSZ) is located in the P1 pyroxenite some 10m below the ultramafic/mafic contact. The MSZ is a continuous layer, 2m to 3m thick, and forms an elongated basin. The zone strikes in a north-northeasterly trend and dips at about 10° on the margins flattening towards the axis of the basin. The MSZ at Mimosa has a well-defined grade profile where peak base metal and PGM values are offset vertically, with palladium dominant towards the base, platinum in the centre and nickel towards the top. As at Zimplats, the MSZ is difficult to identify visually with no clear marker horizons, systematic monitoring supported by channel sampling is required to guide mining.

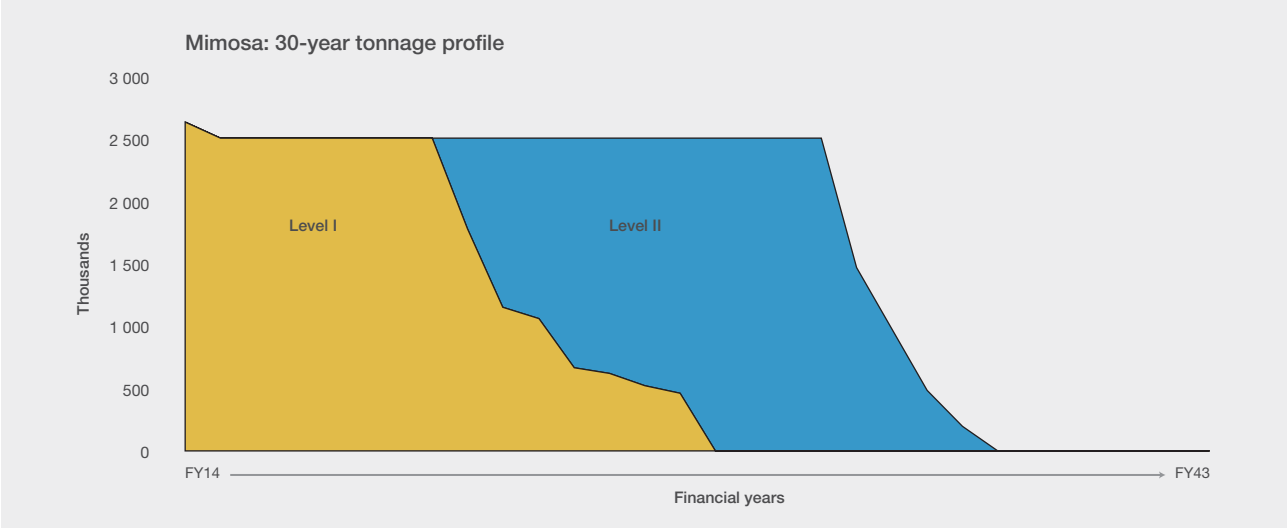
Minor faults and dykes are present at Mimosa. Although no potholes have been identified, low-grade areas and areas of no mineralisation or “washouts” have been intersected. These are all accounted for in the mineral resource and ore reserve statement.

Mimosa is a shallow underground mine accessed by the Blore Decline Shaft system. The bord and pillar mining method is employed and stoping widths average around 2m. Mining bords advance along strike. The mining cycle involves mechanised support drilling and installation, mechanised face drilling, charging and blasting, and mechanised lashing onto a conveyor network to an underground bunker. From the bunker ore is conveyed out to a surface stockpile.

Mining models are based on the platinum peak datum. Mining currently extracts a slice which extends from 0.45m above the platinum peak datum to 1.55m below the datum. The reported mined grade is based on an arithmetic mean of borehole values covering this slice. Work is ongoing to conduct this estimation using block

modelling. Mine design and scheduling is done utilising Surpac™. The mine plan is derived from a target milling throughput. Strategic stockpile levels are factored into the volumes to be hoisted. Losses due to mining and geology are applied to the planned tonnages and then consolidated into the LoM profile. The assured LoM of Mimosa is limited to the Wedza block. Studies continue on the Mtshingwe block (LoM II). This aims at extending the life of Mimosa at 2.4Mt per annum up to 2032.




## Mimosa mineral resources and ore reserves (100%)

as at 30 June 2013

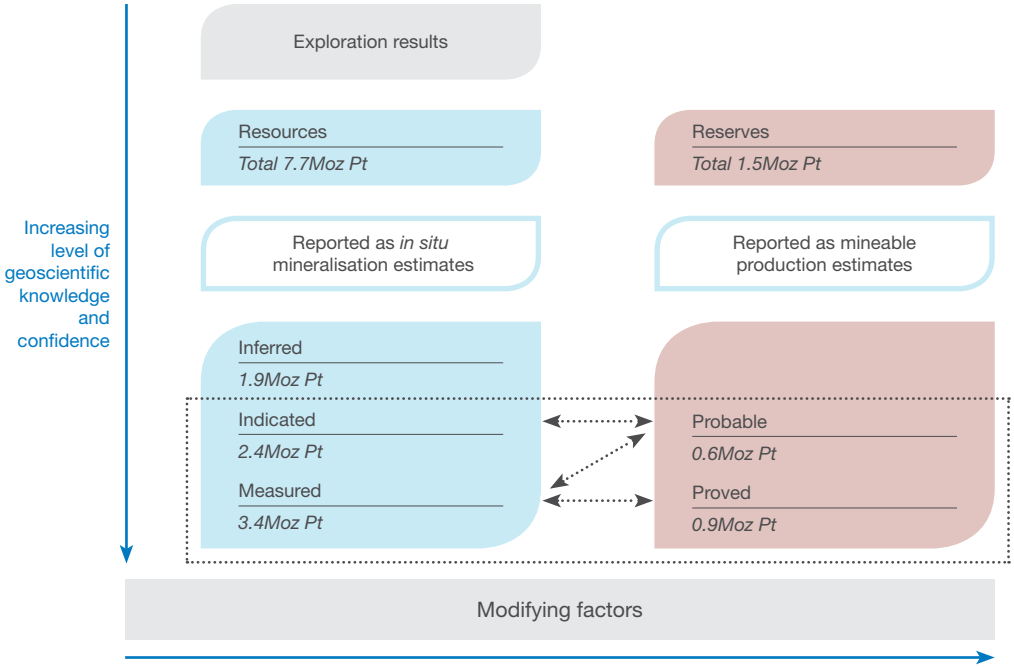
| Mineral resources | | as at 30 June 2013 | | | | | | | | | as at 30 June 2012 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Orebody | Category | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | Ni % | Cu % | 4E Moz | 6E Moz | Pt Moz | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | Ni % | Cu % | 4E Moz | Pt Moz |
| South Hill MSZ | Measured | 39.8 | 200 | 3.88 | 4.14 | 0.13 | 0.11 | 5.0 | 5.3 | 2.4 | 40.4 | 200 | 3.96 | 4.22 | 0.14 | 0.11 | 5.1 | 2.5 |
| | Indicated | 26.7 | 200 | 3.54 | 3.79 | 0.14 | 0.12 | 3.0 | 3.3 | 1.5 | 27.6 | 200 | 3.62 | 3.85 | 0.14 | 0.12 | 3.2 | 1.6 |
| | Inferred | 7.0 | 200 | 3.73 | 3.97 | 0.13 | 0.11 | 0.8 | 0.9 | 0.4 | 6.9 | 200 | 3.72 | 3.97 | 0.14 | 0.12 | 0.8 | 0.4 |
| | Inferred (oxides) | 4.5 | 200 | 3.33 | 3.52 | 0.13 | 0.13 | 0.5 | 0.5 | 0.2 | 4.4 | 200 | 3.58 | 3.84 | 0.14 | 0.12 | 0.5 | 0.3 |
| | **Total** | **77.99** | | **3.72** | **3.97** | **0.14** | **0.11** | **9.3** | **9.9** | **4.6** | **79.4** | | **3.80** | **4.05** | **0.14** | **0.11** | **9.7** | **4.7** |

# Mineral resources and mineral reserves
/ **Mimosa** / continued

| Mineral resources | | as at 30 June 2013 | | | | | | | | | as at 30 June 2012 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Orebody | Category | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | Ni % | Cu % | 4E Moz | 6E Moz | Pt Moz | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | Ni % | Cu % | 4E Moz | Pt Moz |
| North Hill MSZ | Measured | 18.0 | 200 | 3.47 | 3.68 | 0.16 | 0.12 | 2.0 | 2.1 | 1.0 | 18.0 | 200 | 3.49 | 3.70 | 0.14 | 0.10 | 2.0 | 1.0 |
| | Indicated | 16.0 | 200 | 3.57 | 3.78 | 0.15 | 0.11 | 1.8 | 1.9 | 0.9 | 16.0 | 200 | 3.56 | 3.77 | 0.15 | 0.11 | 1.8 | 0.9 |
| | Inferred | 1.9 | 200 | 3.52 | 3.74 | 0.15 | 0.11 | 0.2 | 0.2 | 0.1 | 1.9 | 200 | 3.53 | 3.73 | 0.14 | 0.10 | 0.2 | 0.1 |
| | Inferred (oxides) | 8.0 | 200 | 3.53 | 3.75 | 0.13 | 0.11 | 0.9 | 1.0 | 0.5 | 7.9 | 200 | 3.39 | 3.62 | 0.15 | 0.11 | 0.9 | 0.5 |
| | **Total** | **44.0** | | **3.52** | **3.73** | **0.15** | **0.11** | **5.0** | **5.3** | **2.5** | **43.9** | | **3.50** | **3.71** | **0.15** | **0.11** | **4.9** | **2.5** |
| Far South Hill MSZ | Inferred | 11.3 | 200 | 3.78 | 4.03 | 0.14 | 0.11 | 1.4 | 1.5 | 0.7 | 11.3 | 200 | 3.78 | 4.03 | 0.14 | 0.11 | 1.4 | 0.7 |
| | **Overall total** | **133.3** | | **3.66** | **3.89** | **0.14** | **0.11** | **15.7** | **16.7** | **7.7** | **134.7** | | **3.70** | **3.94** | **0.14** | **0.11** | **16.0** | **7.9** |

| Ore reserves | | as at 30 June 2013 | | | | | | | | | as at 30 June 2012 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Orebody | Category | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | Ni % | Cu % | 4E Moz | 6E Moz | Pt Moz | Tonnes Mt | Width cm | 4E grade g/t | 6E grade g/t | Ni % | Cu % | 4E Moz | Pt Moz |
| South Hill MSZ | Proved | 15.2 | 225 | 3.52 | 3.75 | 0.15 | 0.11 | 1.7 | 1.8 | 0.8 | 17.2 | 200 | 3.59 | 3.82 | 0.14 | 0.12 | 2.0 | 1.0 |
| | Probable | 11.9 | 200 | 3.26 | 3.48 | 0.15 | 0.12 | 1.2 | 1.3 | 0.6 | 12.2 | 200 | 3.39 | 3.61 | 0.15 | 0.12 | 1.3 | 0.7 |
| | **Total** | **27.0** | | **3.40** | **3.63** | **0.15** | **0.12** | **3.0** | **3.2** | **1.5** | **29.4** | | **3.51** | **3.73** | **0.14** | **0.12** | **3.3** | **1.7** |

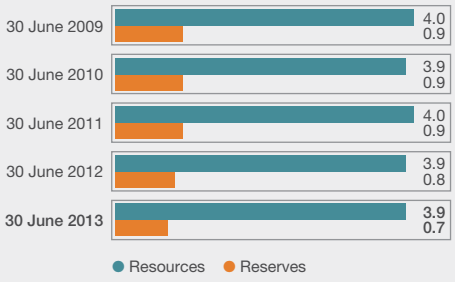
## Relationship between exploration results, mineral resources and ore reserves (100%)



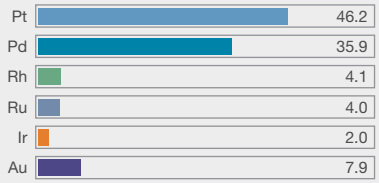
## Notes

- The statement above reflects the total mineral resource and ore reserve estimate for Mimosa as at 30 June 2013. Corresponding estimated mineral resources and ore reserves attributable to Implats are summarised elsewhere in this report
- Mineral resources are quoted inclusive of ore reserves
- Mineral resource estimates allow for estimated geological losses, while no allowance is made for anticipated support pillar losses during eventual mining
- Mineral resource estimates have been done using Surpac™ software to apply inverse distance techniques
- The ore reserves quoted reflect anticipated grades delivered to the mill
- A trenching exercise in the area south of the Blore Shaft working resulted in reinterpretation of the outcrop position resulting in a net gain with the total mineral resource for South Hill
- Some 1.04Mt of the ore reserve situated under surface infrastructure in the eastern part of Wedza Shaft was transferred to a measured resource. In addition, 0.8Mt between the 30m to 60m depths was also transferred into a measured resource because it is now earmarked for open-pit mining. The feasibility studies of open-pit mining are currently under way
- The ore reserves estimations are aligned to the business plan by estimating tonnes and grades at 2.3m mining width for the first five years of the mining schedule after which estimates are at a 2m mining width. An exploration drilling plan has been put in place aimed at reviewing the 2m mining widths beyond the five-year schedule to 2.3m
- Rounding of numbers may result in minor computational discrepancies. Mineral resource estimates are inherently imprecise in nature; the results tabulated in this report must be read as estimates and not as calculations; inferred mineral resources in particular are qualified as approximations.

**Mimosa attributable mineral resources and mineral reserves (Moz Pt)**

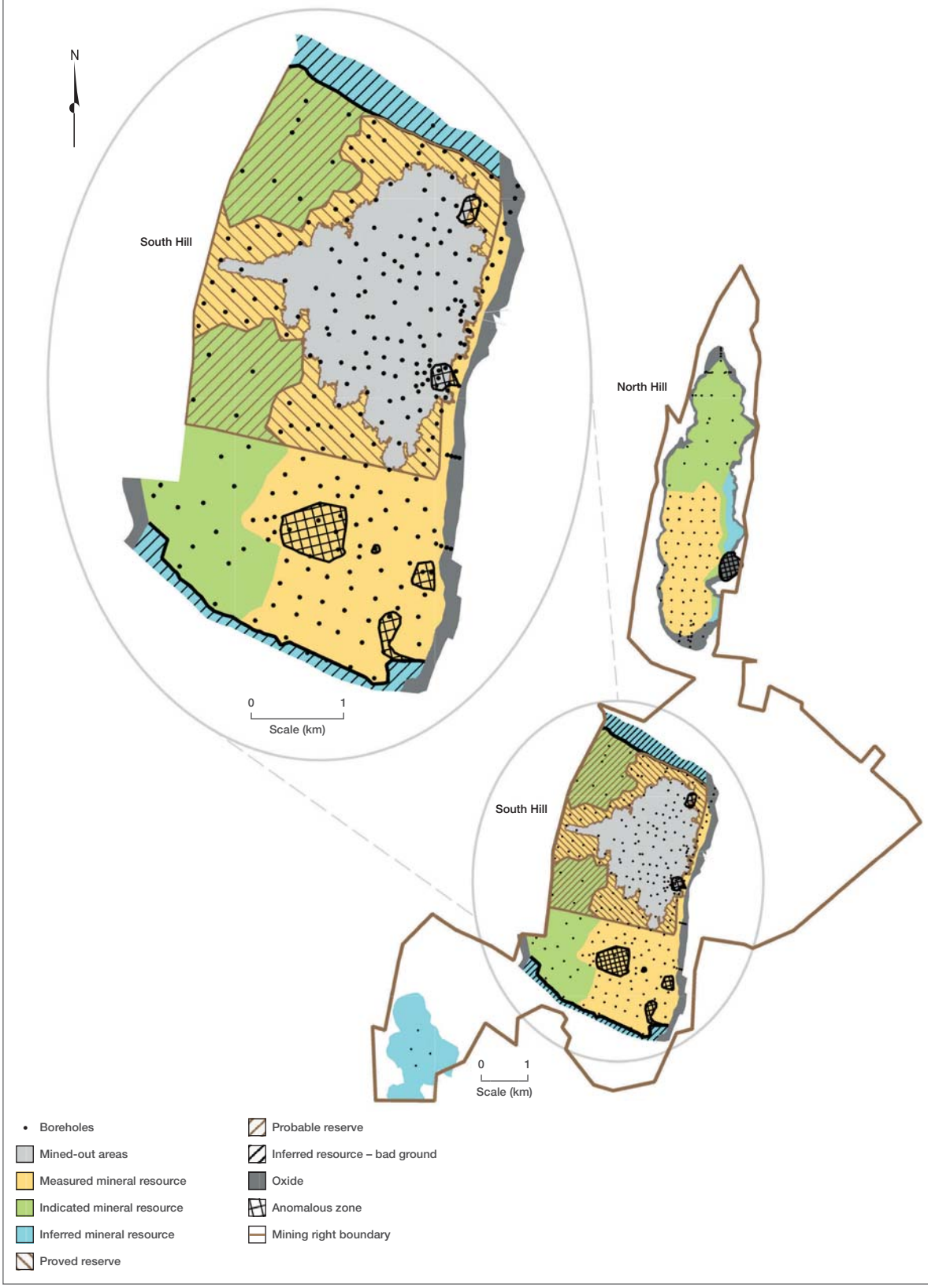



**Mimosa MSZ 6E metal ratio (%)**



# Mineral resources and mineral reserves
/ **Mimosa** / continued

## Mimosa MSZ mineral resources and ore reserves



*Station cutting 17 Shaft*

# Glossary of terms

| | |
|---|---|
| **4E (equivalent to 3PGE+Au)** | Refers to the sum of platinum, palladium, rhodium and gold content as determined by a nickel sulphide collection fire assay procedure; this is considered to be the most accurate assay procedure, and results can usually be compared between laboratories. |
| **6E (equivalent to 5PGE+Au)** | Refers to the sum of platinum, palladium, rhodium, ruthenium, iridium and gold content as determined by a nickel sulphide collection fire assay procedure; this is considered to be the most accurate assay procedure, and results can usually be compared between laboratories. |
| **AA** | Atomic absorption spectroscopy is an analytical technique which uses the absorption of light to measure the concentration of elements. |
| **Afplats** | African Platinum Limited. |
| **Anorthosite** | Igneous rock composed almost entirely of plagioclase feldspar. |
| **Aquarius** | Aquarius Platinum Limited. |
| **ARM** | African Rainbow Minerals Limited of which ARM Platinum is a subsidiary. |
| **ASX** | Australian Securities Exchange. |
| **AusIMM** | Australasian Institute of Mining and Metallurgy. |
| **BEE** | Black economic empowerment. |
| **Bord and pillar** | Underground mining method where ore is extracted from rectangular shaped rooms, leaving parts of the ore as pillars to support the roof. Pillars are usually rectangular and arranged in a regular pattern. |
| **Concentrating** | A process of splitting the milled ore in two fractions, one containing the valuable minerals, the other waste. |
| **Chromitite** | A rock composed mainly of the mineral chromite. |
| **Decline** | A shallow dipping mining excavation used to access the orebody. |
| **Development** | Underground excavations for the purpose of accessing mineral reserves. |
| **DMR** | Department of Mineral Resources, formerly known as the Department of Minerals and Energy (DME). |
| **Diorite** | Igneous rock composed of amphibole, plagiocalse feldspar, pyroxene and small amounts of quartz. |
| **Dunite** | Igneous rock consisting mainly of olivine. |
| **Dyke** | A wall-like body of igneous rock that intruded (usually vertically) into the surrounding rock in such a way that it cuts across the stratification (layering) of this rock. |
| **ECSA** | Engineering Council of South Africa: The Engineering Profession Act, 2000 (Act No 46 of 2000), was promulgated in 2000; the Act became effective in 2011. In terms of section 18(1), the Act empowers ECSA to register persons in certain prescribed Categories of Registration. Paragraph 9 of the SAMREC Code refers to ECSA: “A ‘Competent Person’ is a person who is registered with SACNASP, ECSA or PLATO, or is a Member or Fellow of the SAIMM, the GSSA or a Recognised Overseas Professional Organisation (ROPO)”. |
| **Facies** | The appearance and characteristics of a rock unit, reflecting the conditions of its origin, and differentiating it from adjacent (lateral or vertical) or associated units due to a change in the depositional environment. The term facies must not be confused with reef types, which show some variation within the same environment. |
| **Felsic rock** | An igneous rock composed mainly of a light-coloured mineral-like feldspar (or plagioclase) and usually quartz which are more than 60% by volume. |

| | |
|---|---|
| **Gabbro** | Igneous rock composed mainly and approximately equally of plagioclase feldspar and clinopyroxene. |
| **g/t** | Grams per metric tonne. The unit of measurement of metal content or grade, equivalent to parts per million. |
| **GSSA** | Geological Society of South Africa. |
| **ha** | Abbreviation for hectare, unit of area measured equal to 10 000 square metres. |
| **Harzburgite** | Igneous rock composed mainly of olivine and pyroxene. |
| **HDSA** | Historically disadvantaged South Africans, being South African nationals who were, prior to 1994, disadvantaged whether by legislation or convention. |
| **ICP-MS** | Inductively coupled plasma mass spectrometry (ICP-MS) is a type of mass spectrometry which is capable of detecting metals at low levels. This is achieved by ionizing the sample with inductively coupled plasma and then using a mass spectrometer to separate and quantify those ions. |
| **In situ** | In its natural position or place. |
| **IRS** | Impala Refining Services Limited. |
| **JORC Code** | The 2004 Australasian Code for Reporting of Mineral Resources and Ore Reserves. This was updated and reissued as the JORC Code 2012. |
| **JSE** | JSE Limited, the South African securities exchange based in Johannesburg. Formerly the JSE Securities Exchange and prior to that the Johannesburg Stock Exchange. |
| **Kriging** | A geostatistical estimation method that gives the best-unbiased linear estimates of point values or of block averages. |
| **LoM** | Life of Mine. |
| **LSE** | London Stock Exchange. |
| **Mafic** | An igneous rock composed mainly of dark ferromagnesium minerals, which are less than 90% by volume. |
| **Merensky Reef** | A horizon in the Critical Zone of the Bushveld Complex often containing economic grades of PGM. The “Merensky Reef”, as it is generally used, refers to that part of the Merensky unit that is economically exploitable, regardless of the rock type. |
| **Mill grade** | The value, usually expressed in parts per million or gram per tonne, of the contained material delivered to the mill. |
| **Moz** | Million ounces. All references to ounces are troy ounces with the factor being 31.10348 metric grams per ounce. |
| **MPRDA** | Minerals and Petroleum Resources Development Act of South Africa. |
| **MSZ** | The Main Sulphide Zone (MSZ) is the PGM-bearing horizon hosted by the Great Dyke. In addition to the economically exploitable PGMs there is associated base metal mineralisation. The MSZ is located 10m to 50m below the ultramafic/mafic contact in the P1 pyroxenite. |
| **Mt** | Abbreviation for million metric tonnes. |
| **Norite** | Igneous rock composed mainly of plagioclase feldspar and orthopyroxenes in approximately equal proportions. |
| **NYSE** | New York Stock Exchange. |

# Glossary of terms continued

| | |
|---|---|
| **Pegmatoid** | An igneous rock that has the coarse-crystalline texture of a pegmatite but lacks graphic intergrowths. |
| **PGE** | Platinum group elements comprising six elemental metals of the platinum group. The metals are platinum, palladium, rhodium, ruthenium, iridium and osmium. |
| **PGM** | Platinum group metals being the metals derived from PGE. |
| **PLATO** | The South African Council for Professional Land Surveyors and Technical Surveyors. |
| **Pyroxenite** | Igneous rock composed mainly of pyroxene and minor feldspar. |
| **QAQC** | Quality Assurance and Quality Control. |
| **RBR** | Royal Bafokeng Resources. |
| **Reef** | A local term for a tabular metalliferous mineral deposit. |
| **ROPO** | Recognised Overseas Professional Organisation. |
| **SACNASP** | South African Council for Natural Scientific Professions: The Natural Sciences Profession Act, 2003 (Act No 27 of 2003), was approved in 2003. The Act empowers SACNASP to register persons in certain prescribed categories of registration. Paragraph 9 of the SAMREC Code refers to SACNASP: "A 'Competent Person' is a person who is registered with SACNASP, ECSA or PLATO, or is a Member or Fellow of the SAIMM, the GSSA or a Recognised Overseas Professional Organisation (ROPO)." |
| **SAIMM** | South African Institute of Mining and Metallurgy. |
| **SAMREC** | The South African Mineral Resource Committee. |
| **SAMREC Code** | The South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves. |
| **Seismic surveys** | A geophysical exploration method whereby rock layers can be mapped based on the time taken for wave energy reflected from these layers to return to surface. |
| **Smelting** | A smelting process to upgrade further the fraction containing the valuable minerals. |
| **SSC committee** | SAMREC/SAMVAL committee. |
| **Stoping** | Underground excavations to effect the removal of ore. |
| **UG2 Reef** | A distinct chromitite horizon in the Upper Critical Zone of the Bushveld Complex usually containing economic grades of PGE. |
| **Ultramafic rock** | An igneous rock composed mainly of dark ferromagnesium minerals, which are more than 90% by volume. |
| **Websterite** | Igneous rock composed almost entirely of clino- and orthopyroxene. |

# Mineral resource and mineral reserve definitions

**SAMREC Code** – the South African Code for reporting of mineral resources and mineral reserves sets out minimum standards, recommendations and guidelines for public reporting of exploration results, mineral resources and mineral reserves in South Africa. SAMREC was established in 1998 and is modelled on the Australasian Code for reporting of mineral resources and ore reserves (JORC Code). The 2007 revision was amended in June 2009.

In terms of SAMREC, a "Competent Person" is one who is registered with the South African Council for Natural Scientific Professions (SACNASP), the Engineering Council of South Africa (ECSA) or the South African Council For Professional Technical Surveyors (PLATO), or is a member of or fellow of the SAIMM, the GSSA or a recognised overseas professional organisation (ROPO). A complete list of such recognised organisations is promulgated by the SSC from time to time. The Competent Person must comply with the provisions of the relevant promulgated acts. A Competent Person must have a minimum of five years' experience relevant to the style of mineralisation and type of deposit or class of deposit under consideration and to the activity they undertake. If the Competent Person is estimating or supervising the estimation of mineral resources, the relevant experience must be in the estimation, assessment and evaluation of mineral resources. Persons called upon to sign as a Competent Person must be clearly satisfied in their own minds that they are able to face their peers and demonstrate competence in the commodity, type of deposit and situation under consideration.

**A mineral resource** – is a concentration or occurrence of material of economic interest in or on the earth's crust in such form, quality and quantity that there are reasonable and realistic prospects for eventual economic extraction. The location, quantity, grade, continuity and other geological characteristics of a mineral resource are known, or estimated from specific geological evidence, sampling and knowledge interpreted from an appropriately constrained and portrayed geological model. Mineral resources are subdivided, and must be so reported, in order of increasing confidence in respect of geoscientific evidence, into inferred, indicated or measured categories.

**An inferred mineral resource** – is that part of a mineral resource for which volume or tonnage, grade and mineral content can be estimated with only a low level of confidence. It is inferred from geological evidence and sampling and assumed but not verified geologically or through analysis of grade continuity. It is based on information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that may be limited in scope or of uncertain quality and reliability. An inferred mineral resource has a lower level of confidence than that applying to an indicated mineral resource.

**An indicated mineral resource** – is that part of a mineral resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a reasonable level of confidence. It is based on information from exploration, sampling and testing of material gathered from locations such as outcrops, trenches, pits, workings and drill holes. The locations are too widely or inappropriately spaced to confirm geological or grade continuity but are spaced closely enough for continuity to be assumed. The indicated mineral resource has sufficient confidence for mine design, mine planning or economic studies.

**A measured mineral resource** – is that part of a mineral resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a high level of confidence. It is based on detailed and reliable information from exploration, sampling and testing of material from locations such as outcrops, trenches, pits, workings and drill holes. The locations are spaced closely enough to confirm geological and grade continuity. A measured mineral resource provides sufficient confidence for mine design, mine planning, production planning and detailed economic studies to be undertaken.

# Mineral resource and mineral reserve definitions continued

**A mineral reserve** – is the economically mineable material derived from a measured or indicated mineral resource or both. It includes diluting and contaminating materials and allows for losses that are expected to occur when the material is mined. Appropriate assessments to a minimum of pre-feasibility study for a project and a LoM plan for an operation must have been completed, including consideration of, and modification by, realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and government factors (the modifying factors). Such modifying factors must be disclosed. Mineral reserves are reported as inclusive of diluting and contaminating uneconomic and waste material delivered for treatment or dispatched from the mine with treatment. Mineral reserves are sub-divided in order of increasing confidence into probable and proved mineral reserves.

**A probable mineral reserve** – is the economically mineable material derived from a measured or indicated mineral resource or both. It is estimated with a lower level of confidence than a proved mineral reserve. It includes diluting and contaminating materials and allows for losses that are expected to occur when the material is mined. Appropriate assessments to a minimum of pre-feasibility study for a project or a LoM plan for an operation must have been carried out, including consideration of, and modification by, realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors.

**A proved mineral reserve** – is the economically mineable material derived from a measured mineral resource. It is estimated with a high level of confidence. It includes diluting and contaminating materials and allows for losses that are expected to occur when the material is mined. Appropriate assessments to a minimum of a pre-feasibility study for a project or a LoM plan for an operation must have been carried out, including consideration of, and modification by, realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors.

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