# Mineral resource and reserve estimate

Reporting of mineral resources and mineral reserves conforms to the reporting standards of the South-African Resource Committee (SAMREC) code.

Northam Platinum's estimates were audited for compliance by MSA Geoservices (Pty) Limited, mineral exploration and evaluation specialists in July 2006.

Northam Platinum exploits both the Merensky and UG2 reefs of the Upper Critical Zone of the Bushveld Igneous Complex. While there is lateral continuity of both reefs across the mine property, the Merensky reef displays a variety of reef types. The lateral distribution of these is determined from a combination of ongoing prospect drilling, performed from underground development, complemented by reef mapping in development and stoping. In contrast to the Merensky reef, the UG2 displays little variation in reef attributes.

Mineral resource tonnages and grades are in-situ estimates. The most reasonable mining width was assumed based on practical mining conditions. The associated three Platinum Group Elements (platinum, palladium and rhodium) and gold (3PGE+ Au) grade, as well as the specific gravity were calculated for these widths. Estimates, derived from kriging parameters were applied to the mining areas, in order to estimate tonnage and metal content. Kriging parameters are derived from interrogation of an extensive database of information pertaining to individual samples and their associated assays.

The measured and indicated mineral resources are reported separately and include those mineral resources modified to produce proven and probable mineral reserves. All mineral resources are quoted as in-situ resources whereas all reserves are quoted at run-of-mine (ROM) grades and tonnages as delivered to the metallurgical processing facilities on site – they are therefore fully diluted. All mineral reserves are quoted as at 30 June 2006.

For the period under review all tabulated mineral resource and mineral reserve estimates are based on underground operations only.

## Merensky Reef

The Merensky reef is a zone of mineralization which straddles the base of the Merensky Cyclic Unit. In the area of Northam mine the Merensky reef consists of two sub-facies of the Zwartklip facies of the Rustenburg Layered Suite, namely the Normal and Regional Pothole sub-facies. The latter may be further subdivided into three reef-types, each of which occurs at a specific stratigraphic level below that of the Normal Reef sub-facies. These being NP2 and P2, which constitute the main sources of ore, and FWP2, which, whilst not considered a primary mining target due to the undulating nature of this reef-type, is successfully exploited in the south western quadrant of the current mining area where it displays lesser disruption.

The stoping cut on the Merensky reef is dependent upon the reef type mined, and the area of the mine worked. In all stoping cuts the Merensky Chromitite is exposed, with a minimum of 10 cm of mineralized Merensky Pyroxenite as hanging wall. A 150 cm cut is applied to the Normal Reef, 110 cm for NP2, 120 cm and 140 cm for P2 on the west and east of the mine respectively, and 120 cm for FWP2.

The measured resource is an estimate of the in-situ tonnage and grade (3PGE + Au) that has been exposed through development and is accessible for immediate exploitation. This has increased by 9.95% in 2006, to 2.21 Mt (562 koz), from 2.01 Mt (509 koz) in 2005. The main reason for this increase was the higher development rate achieved during the past year. This enabled Northam to establish more new working face. However, this was partially offset by

| Merensky Reef | | | |
|---|---|---|---|
| **Metal split (3PGE + Au)** | | **Base metal grades** | |
| Pt: | 61% | Cu: | 0.060% |
| Pd: | 30% | Ni: | 0.147% |
| Rh: | 6% | | |
| Au: | 3% | | |

a decline in stoping extraction, which is currently 64% on the west (down from 67%) and 54% on the east (down from 59%) of the current mining area. This resulted from an increase in the the proportion of undulating NP2 reef to the east of the mine, and FWP2 reef to the west. The erratic distribution of the various reef types, and their varying stratigraphic elevations has a negative effect on mining. It leads to reduced extraction rates, and can negatively influence the quality of the ore available for processing.

### UG2 Reef

At Northam Platinum mine the UG2 reef is remarkably conformable when compared with the Merensky reef. Reef disruption in the form of potholes and reef rolls is extremely limited and localised. The reef consists of three chromitite seams separated by narrow pyroxenite partings. The lower seam, termed the main member, is generally in the order of 75 cm thick, and is overlain by two leader seams, each in the order of 15 cm thick. The total thickness of the reef, inclusive of a portion of mineralized reef footwall, is in the order of 140 cm to 150 cm. There is currently no basis for subdividing the UG2 reef into various reef-types.

UG2 mining has historically been limited to de-stressed areas underlying previously mined Merensky reef. Furthermore, a full reef cut is mined, which enhances metal output, hanging wall stability and a safer working environment.

The measured UG2 resource is an estimate of the in-situ tonnage and grade (3PGE + Au) that has been exposed through development, is accessible for immediate exploitation and is situated within de-stressed ground. Exposed UG2 resources situated in virgin ground are generally discounted. However, trial mining of UG2 outside of de-stressed areas has been conducted during the past year, and early results are very positive. UG2 extraction, and consequently the measured UG2 resource, could further improve should these trials support the viability of the mining method.

The measured UG2 resource has increased by 52.38%, to 1.92 Mt (303 koz) from 1.26 Mt (199 koz) in 2005. This increase is in line with the planned development of the UG2 reef together with the inclusion of UG2 resources within certain areas outside of de-stressed ground.

### Surface operations

The slag plant for reprocessing furnace slag has been commissioned, and is expected to operate within the set parameters. Approximately 800 000 tonnes of slag, at an estimated average grade of 1.039 grams per tonne is available for re-processing.

| UG2 Reef | | | |
|---|---|---|---|
| **Metal split (3PGE + Au)** | | **Base metal grades** | |
| Pt: | 58% | Cu: | 0.018% |
| Pd: | 31% | Ni: | 0.135% |
| Rh: | 10% | | |
| Au: | 1% | | |

### Sampling techniques and data:

Unless otherwise stated, the following processes apply to both the Merensky and UG2 reefs:

### Sampling techniques

Sampling involves obtaining a solid channel sample, cut from the stope or development face using a hydro-powered circular rock saw fitted with a diamond-impregnated blade. The resultant samples are well balanced and representative in two dimensions. The rock face is segregated into the various lithological units from which the samples are cut. Samples are cut over the full width of the stope or development face to ensure maximum exposure, they are cut to a width and depth of approximately 4 cm, which adequately caters for the in-situ nugget effect, and to a minimum length of 10 cm, up to a maximum of 20 cm. 20 cm samples are predominantly cut in the footwall of the reef. Sample width may be increased to 8 cm where difficulties are encountered in obtaining sufficient sample mass.

A 15 m x 15 m sampling grid is applied to the stoping environment, whilst all reef development is sampled at five metre intervals. The sampling grid dimensions correspond to the minimum sample variance determined for varying grid sizes.

A quality assurance and audit trail programme is in place to ensure the integrity of samples sent for analysis.

Audits are in the form of random checks. These include but are not limited to:

- Sample quality and mass;
- Numbering sequence of samples;
- Flagging of high chrome content samples for laboratory identification;
- Verification of all samples to ensure that no samples are lost;
- Validation of samples against samplers' field books.

The audit programme also assists in identifying problems that may exist in obtaining quality samples. Remedial action is taken in the form of follow-up inspections and re-training. Random task observations are carried out underground to ensure that sample procurement standards are maintained.

Samples are transported under close supervision and in steel boxes to the assay laboratory. The samples are counted and checked against a request sheet to ensure that no samples are lost between the point of origin and the laboratory. This procedure also eliminates any potential for tampering with samples en route.

### Assay data and laboratory investigations

The assay technique employed is a double cupellation fire fusion process, performed in a high temperature muffle type furnace. The fluxing agent is a lead collection flux, where the prill obtained is weighed to calculate the final content of the sample. No correction factor is applied to the results during any stage of the analytical process.

Each sample is analysed for 3PGE + Au content. Quality control is achieved by randomly repeating samples to corroborate the results obtained at any one time. In addition to random repeats, a control sample, of which the content is known, is also added at random to each tray of samples for additional verification.

Analytical results are then verified by the chief chemist, using the results of the random repeats and control samples. They are then captured directly into the sampling database.

### Data locations

Each sample section bears a unique identification number. Survey stations established underground are used to determine the relevant position of each sample section, which are then plotted on a plan, drawn to a scale of 1:200. The plotted positions bear reference to the sample number and are digitized to obtain their position in XYZ space. These are imported into DataMine, where graphical representation of the data allows verification of the three dimensional parameters of the sample sections. Plotting inaccuracies are corrected at this point.

### Data density and distribution

Data distribution is well spaced throughout the mining area to adequately perform any estimation required.

Monthly sampling coverage averages 95%.

### Database integrity

Data is retained in a central database system, (SQL 2000) which is backed up daily, allowing for capturing of data at any one appropriate site. Unauthorized access to the system is prohibited via stringent protocols and access control. An electronic link between the source of the samples and the laboratory exists to minimize transcription errors when updating the database with analytical information.

A two-stage validation process is in place for any analytical information that is accepted into the database.

### Geological interpretations

The Merensky reef and the UG2 are well-recognized ore bodies with well established lateral continuity across the mine property. The Merensky reef displays a wide range of lateral reef type variations related to the elevation of the Merensky Chromitite with respect to various footwall lithologies. The reef types are therefore classified according to the immediate footwall lithology and flagged appropriately to ensure that the data pertaining to one reef type is not mixed with another reef type. Consequently a homogeneous "Reef Type Database" is created. The current mining area is divided into two separate geozones on the P2 reef as a consequence of its physical attributes.

# Mineral resource and reserve estimate continued

Prospect drilling from footwall development provides reef information from which the geological model is updated on a macro scale. Borehole reef intersections are neither analysed for 3PGE + Au content nor are they captured into the sampling database.

In interpreting the dynamic geological model on the meso-scale, all reef development and stoping faces are logged by sampling personnel and mapped geologically on an ongoing basis.

## Estimation and modeling techniques

Grade (3PGE + Au) estimations for all the various Merensky reef types, as well as UG2 reef are compiled using geostatistical techniques. Simple kriging is the most appropriate technique based on the descriptive statistics calculated for each reef type.

An assumption is made that all reef types are planar with no local potholing or variation. Data pertaining to each reef type is stored separately to ensure homogeneity. The sample data is calculated to conform to the required hanging wall width and stoping width, once the mining cut is decided upon.

A regular grid of 30 x 30 metres is used during the estimation process. This supports the sampling grid in use for underground workings. Since the footwall stratigraphy varies in accordance with the elevation of the Merensky Chromitite, the reef types are treated separately. Each sample section is calculated to conform to the planned mining cut from where the data is exported into the geostatistical evaluation programme.

Variograms are calculated for each reef type in DataMine and modeled separately for each variable. The variables are 3PGE + Au grade and stoping width where appropriate on Normal Reef and UG2. The specific gravity is no longer considered as an independent variable during the kriging process and the arithmetic mean for each reef type is used.

The grade variograms indicate a high nugget effect to sill ratios, which is characteristic of platinum deposits. The range of influence varies in different directions, giving a geometric anisotropy character. The omni-directional variogram was modeled and used in the valuation process.

The variograms support the geological model and mineralization model based on experience gained and observations made during the extraction process.

Back transformation calculations are performed to test the appropriateness and fit of all variograms. The correlation between the estimated grade and original grades is determined from a

scatter plot of these two parameters. If necessary, the variogram parameters are edited and the process repeated.

The variables are kriged into the block models from where the measured resource is evaluated.

### Cut-off grades or parameters

Most of the FWP2 reef cannot be mined without incurring excessive dilution, thereby reducing the recovered grade.On this basis, much of the FWP2 reef is not mined.

No cut-off grades are calculated for any other reef type.

### Mining method

Mining is successfully conducted using a breast-stoping method, employing hydro-powered rock drills. Stope cleaning is undertaken using high pressure water-jets and gully scrapers, transporting broken ore to a conventional ore-pass system.

Separate ore handling facilities exist to segregate ore bearing material from waste as well as Merensky reef from UG2 reef.

Since the reef is not planar, as is assumed during the data compilation stage, it is understood that a certain proportion of external dilution will occur during the mining operations. This dilution occurs at a lower grade and is accounted for during the conversion from resources to reserves.

Modifying factors for the conversion of resources to reserves:

| **Tonnage ratios on Merensky Reef** | | | | | |
|---|---|---|---|---|---|
| | **F2005** | | **F2006** | | **F2007** |
| | **Est** | **Act** | **Est** | **Act** | **Est** |
| | **%** | **%** | **%** | **%** | **%** |
| Stoping | 83 | 83 | 86 | 83 | 85 |
| Other sources | 4 | 4 | 4 | 4 | 4 |
| Development | 3 | 3 | 3 | 3 | 4 |
| Survey discrepancy | 10 | 10 | 7 | 11 | 7 |
| Mine call factor | 101 | 101 | 97 | 101 | 97 |
| Block/dilution factor | 100 | 99 | 100 | 97 | 98 |
| **Tonnage ratios on UG2 Reef** | | | | | |
| Stoping | 95 | 95 | 93 | 96 | 95 |
| Other sources | 3 | 3 | 4 | 3 | 4 |
| Development | 6 | 6 | 5 | 5 | 3 |
| Survey discrepancy | -4 | -4 | -2 | -4 | -2 |
| Mine call factor | 91 | 91 | 93 | 92 | 93 |
| Block/dilution factor | 96 | 96 | 100 | 96 | 98 |

# Mineral resource and reserve estimate overview continued

## Tonnage Factors

In-situ densities are calculated to the equivalent of the stoping cut assumed. The data for each reef type is pooled separately and the arithmetic mean is used as a tonnage factor.

## Classification

Measured mineral resources are delineated between raise-lines that have been developed to completion and sampled. Underground diamond drilling is combined with face mapping and sampling to delineate reef variability between sampled localities. The remainder of the area is classified as an indicated mineral resource.

## Mining factors or assumptions

Modifying factors used in converting mineral resources into mineral reserves are based on historical performance. An internal ore accounting system is in place, which provides information on all sources of ore in addition to dilution that takes place in the ore flow, from source to mill.

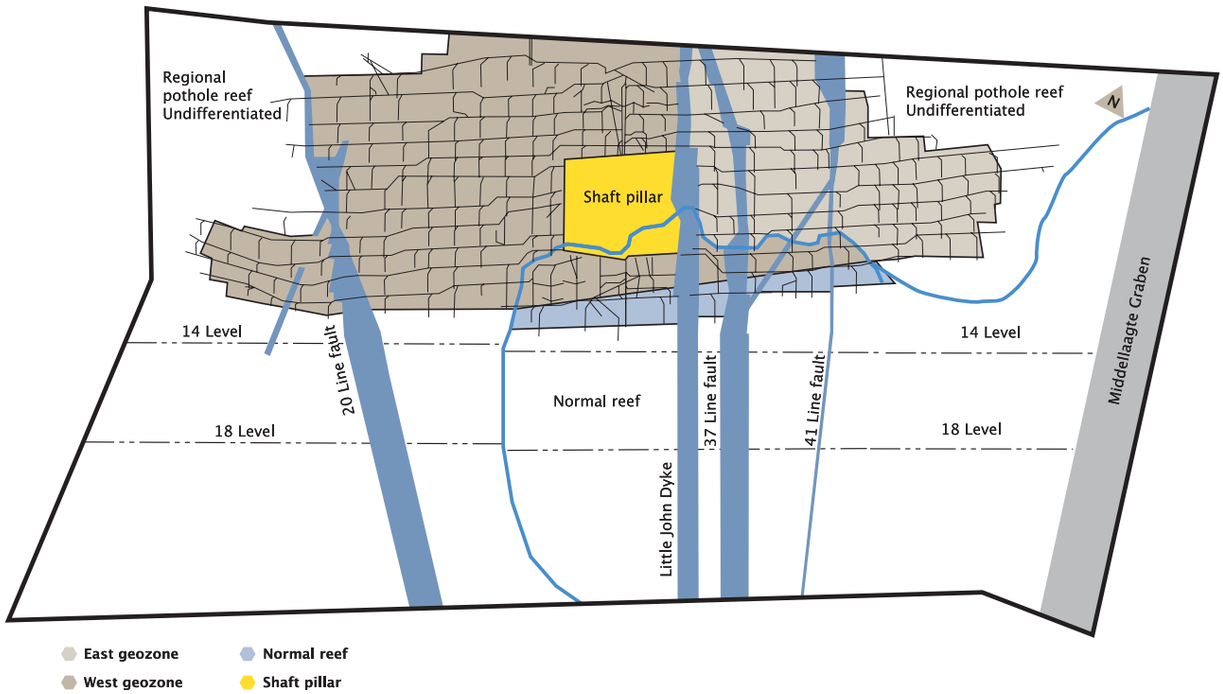
## Estimation and Reporting of Mineral Reserves

Mineral Resource estimates for conversion to Mineral Reserves:

> The measured and indicated mineral resources are those mineral resources modified to produce proven and probable mineral reserves.

> All mineral reserves are quoted as at 30 June 2006.

> All mineral reserves are quoted at a ROM grade and tonnages as delivered to the metallurgical processing facilities on site and are therefore fully diluted.



## Audited mineral resource and mineral reserve statement

This section reflects the company's audited mineral resource and mineral reserve statement for Merensky and UG2 reef at 30 June 2006.

The mineral resource statements are sub-divided into those mineral resources that have been modified to produce mineral reserves and those which have not been modified.

### Mineral Resource and Mineral Reserve Statement

| Merensky Reef | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Reserve category | | | | | Mineral resource category | | | | |
| | Tonnes | MHG* | Metal | Metal | | Tonnes | In-situ | Metal | Metal |
| | Mt | g/t | kg (000) | oz (000) | | Mt | g/t | kg (000) | oz (000) |
| Proved | | | | | Measured | | | | |
| Northern boundary to level 14 | 2.6 | 6.07 | 16 | 510 | Northern boundary to level 14 | 2.21 | 7.91 | 17 | 562 |
| Sub total | 2.6 | 6.07 | 16 | 510 | Sub total | 2.21 | 7.91 | 17 | 562 |
| Probable | | | | | Indicated | | | | |
| Northern boundary to level 14 | 21.9 | 6.07 | 133 | 4 281 | Northern boundary to level 14 | 18.87 | 7.71 | 145 | 4 678 |
| Shaft pillar 14 level to 18 level | | | | | Shaft pillar | 1.80 | 7.29 | 13 | 421 |
| | | | | | 14 level to 18 level | 14.43 | 7.36 | 106 | 3 414 |
| Sub total | 21.9 | 6.07 | 133 | 4 281 | Sub total | 35.10 | 7.54 | 265 | 8 513 |
| Total | 24.5 | 6.07 | 149 | 4 791 | Total | 37.31 | 7.57 | 282 | 9 075 |
| UG2 Reef | | | | | | | | | |
| Reserve category | | | | | Mineral resource category | | | | |
| | Tonnes | MHG* | Metal | Metal | | Tonnes | In-situ | Metal | Metal |
| | Mt | g/t | kg (000) | oz (000) | | Mt | g/t | kg (000) | oz (000) |
| Proved | | | | | Measured | | | | |
| Northern boundary to level 14 | 2.1 | 4.18 | 9 | 278 | Northern boundary to level 14 | 1.92 | 4.89 | 9 | 303 |
| Sub total | 2.1 | 4.18 | 9 | 278 | Sub total | 1.92 | 4.89 | 9 | 303 |
| Probable | | | | | Indicated | | | | |
| Northern boundary to level 14 | 36.2 | 4.18 | 151 | 4 854 | Northern boundary to level 14 | 33.62 | 4.89 | 164 | 5 287 |
| | | | | | 14 level to 18 level | 20.10 | 4.89 | 98 | 3 161 |
| Shaft pillar | | | | | Shaft pillar | 2.14 | 4.90 | 10 | 336 |
| Sub total | 36.2 | 4.18 | 151 | 4 854 | Sub total | 55.86 | 4.89 | 273 | 8 782 |
| Total | 38.3 | 4.18 | 160 | 5 132 | Total | 57.78 | 4.89 | 283 | 9 087 |

* Mill head grade

Northam's resources and reserves statement has been compiled by the following competent persons:
**J C Roberts** MSc (Mining Engineering), Professional Mine Surveyor (PLATO 0187) – Chief surveyor with 15 years experience in platinum valuation.
**D Smith** BSc (Hons) Geology, MSc Geology, Pr. Sci.Nat. 400 323/04 – Chief geologist with 11 years experience in the Bushveld Complex.