Introducing Implats

Implats is in the business of mining, refining and marketing platinum group metals and associated base metals.

Contribution by metal

- Platinum, 64.80%
- Palladium, 8.50%
- Nickel, 10.60%
- Rhodium, 10.70%
- Other, 5.50%

Platinum, 64.80%
**Key statistics**

**Implats**
- Has operations located on two prime PGM deposits
  - the Bushveld Complex in South Africa (Impala Platinum, Marula Platinum and Two Rivers Platinum)
  - the Great Dyke in Zimbabwe (Zimplats and Mimosa)
- Impala Refining Services – toll-refining and third party processing
- Strategic interests in Aquarius Platinum and Ambatovy

**Group structure**

* 20% to be allocated to BEE ownership
Location of operations and interests

Platinum reserves and resources (attributable)

- 215.1 Moz attributable reserves and resources at as 30 June 2005
Operations

Location – South African mine-to-market operations
Impala Platinum

Implats’ flagship operating unit comprises

- Mining operations on the Impala lease area on the western limb of the Bushveld Complex
  - 13 shafts and five declines
  - Two shafts under development
- Mineral Processes
  - Concentrating and smelting plants
- Refineries
  - Base metal refinery and precious metal refinery

### Financial Information (FY2005)

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tonnes milled (000t)</td>
<td>15,778</td>
</tr>
<tr>
<td>Refined Pt production (000oz)</td>
<td>1,115</td>
</tr>
<tr>
<td>Cost per Pt oz refined (R/oz)</td>
<td>4,251</td>
</tr>
<tr>
<td>No of employees (000)</td>
<td>26.9</td>
</tr>
<tr>
<td>Capex (Rm)</td>
<td>1,693</td>
</tr>
</tbody>
</table>

30-year life-of-mine at 1.1Moz Pt annually
Impala – focus on costs through technology

- Roll-out of drill jigs
- 20% Merensky panels in FY05
  60% Merensky panels in FY06
  100% Merensky panels in FY07
- Potential for 5-10% improvement in overall mining efficiencies

New shaft developments at Impala

Capex of R6.6 billion approved by board

- 20 shaft
  - production to begin in January 2009
  - full production in May 2011
- 16 shaft
  - production to begin in August 2011
  - full production in September 2014
- At full production, these shafts will together produce 355,000 oz platinum pa
Marula Platinum

- Change to owner-mining in Dec 2004/Jan 2005
- Further development expenditure of R830 million approved for conversion to conventional mining
- Currently in ramp-up phase
  - Steady state production of 140,000 oz platinum in 2009
- Life-of-mine of 17 years

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Tonnes milled (000t)</td>
<td>766</td>
</tr>
<tr>
<td>Platinum production in concentrate (oz)</td>
<td>29,800</td>
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<tr>
<td>Capex (Rm)</td>
<td>118</td>
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</tbody>
</table>

Two Rivers Platinum

- Project go-ahead given in FY2005
- Planned capital expenditure of R1.2 billion
- Project plan includes
  - Mining of 2.2 mt ore pa
  - Production of 120,000 oz platinum pa
  - Full production scheduled for 2008/09
  - Life-of-mine of 20 years
Location – Zimbabwean mine-to-market operations

Zimplats

- Underground expansion approved (US$46 million)
- Feasibility study for further expansion to 145,000 Pt oz

<table>
<thead>
<tr>
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<th>FY2005</th>
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<tbody>
<tr>
<td>tonnes milled (000t)</td>
<td>2,058</td>
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<tr>
<td>platinum production in matte (oz)</td>
<td>86,800</td>
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<tr>
<td>cost per Pt oz in matte (R/oz)</td>
<td>6,249</td>
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</table>
Mimosa

- Expansion to 80,000 Pt oz approved

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<th>FY2005</th>
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</thead>
<tbody>
<tr>
<td>tonnes milled (000t)</td>
<td>1,424</td>
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<tr>
<td>platinum in concentrate (oz)</td>
<td>66,700</td>
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<tr>
<td>cost per Pt oz in concentrate (R/oz)</td>
<td>5,472</td>
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</table>

Impala Refining Services

- Undertakes processing of third party material
  - toll-refining activities and concentrate purchases
- One of the world’s largest refiners of spent autocatalysts
- Headline production of 733,000 oz of platinum in FY2005
Ambatovy nickel project

- US$2.25 billion joint venture with Dynatec and Sumitomo Corporation
  - 37.5% – experts in processing of laterite nickel deposits
  - 37.5% – 30 years’ experience in nickel refining; infrastructural synergies
  - 25% – guaranteed annual offtake of 30,000 t nickel for 15 years

Planned production of 60,000 tpa nickel and 5,600 tpa cobalt
- Detailed feasibility study being undertaken – decision by June 2006
- If given go-ahead – first production expected in 2009
- Estimated life of project of 27 years
- IRR of 15-20%
Group capex

- Significant capital expenditure planned

![Bar chart showing capital expenditure planned for FY05 to FY10 for sustaining capex, expansion capex, and Ambatovy.]

Driver of future demand
Platinum used for oxidation of hydrocarbons and carbon monoxide in both gasoline and diesel engines

Palladium preferred metal for high temperature conversion of hydrocarbons

Rhodium is unique in its ability in converting NOx to Nitrogen

PGMs are unique in their durability in these hostile environments

Regional emission legislation

Rest of world vehicle sales

Diesel emission control catalysts

Further growth in European diesel car sales

Substitution of platinum in gasoline engines

NOx control in gasoline engines
Emission legislation

- Continuous tightening of existing standards worldwide
- Adoption of standards in other countries
- Spread of legislation to off-road and marine

Stricter legislation

EU light-duty gasoline emission limits

- HC + NOx
- [HC + NOx]
- HC
- NOx
- CO/10

Graph showing emission limits from Euro I to Euro IV from 1993 to 2007.
Standards for NOx are phased in
- After treatment needed from 2010

Growth in vehicle sales
- Rest of world vehicle sales set to grow strongly
Platinum
Current diesel emission control catalysts

- Requires use of oxidation catalyst to convert hydrocarbons and carbon monoxide
- Optional use of particulate filters to eliminate soot

Future diesel emission control catalysts

New emission standards require after-treatment for reduction of
- Particulate matter
- NOx emissions
Particulate matter

- Diesel particulate filters are devices used to trap soot particulates and oxidize them

![Diagram of Diesel particulate filters](image1)

Diesel particulate filter technology

![Diagram of Diesel particulate filter technology](image2)
NOx Emissions

- NOx traps (absorbers)
- Selective catalytic reduction (SCR)

NOx traps

- Absorbs NO\textsubscript{2} during storage mode and subsequently reduces it to nitrogen
### NOx traps

**Pros**
- Compliance with Environmental Protection Agency (EPA) – tamper proof

**Cons**
- Durability
- Tolerance to sulphur contamination

### Selective catalytic reduction (SCR)

- Proven method used since 1980 in stationary applications
- System uses urea to reduce NOx to nitrogen
Selective catalytic reduction (SCR)

Pros
► Can meet ultra-low NOx limit
► Allows improved fuel economy

Cons
► EPA has no clear regulatory control over urea compliance in USA
► Lack of urea infrastructure
Substitution of platinum in gasoline engines

- Palladium is being used to a substitute for platinum due to its lower cost

Rhodium

NOx control in gasoline engines

- Rhodium is the only metal which selectively reduces NOx to nitrogen
**Implications for PGMs**

**Platinum**
- Increased diesel vehicle sales and the use of catalysed particulate filters could result in demand approaching 5 million ounces by the end of the decade

**Palladium**
- Aided by strong Asian vehicle sales, demand set to exceed its previous peak of 5.5 million ounces

**Rhodium**
- Increased loadings in response to stricter legislation is forecast to result in demand reaching 900,000 ounces by 2010

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**Great platinum market fundamentals**

![Graph showing surplus/deficit and price trends from CY99 to CY07.]

**growth fuelled by strong automotive diesel demand**
Palladium surplus continues above-ground stocks cap price

Highly volatile rhodium market tightening NOx legislation driving demand
Conclusion

Prospects for Implats

- Sound PGM market fundamentals
- Consistent growth in production – 2.3Moz Pt targeted for FY2010
- Continuing to deliver a competitive cost advantage and superior shareholder returns
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