

# Platinum prospects

Juniors making the grade

November 2008



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## COMPANIES FEATURED

Braemore Resources	Platinum Group Metals
Eastern Platinum	Platmin
Jubilee Platinum	Ridge Mining*
Nkwe Platinum*	Sylvania Resources
Platinum Australia	Wesizwe Platinum

Companies denoted with \* are a research client of Edison Investment Research Limited.

# Platinum prospects

## Juniors making the grade

A change in South African mining legislation has seen the emergence of a junior platinum sector, which can explore and produce platinum at lower costs than the majors. Although the decline in the platinum price has affected the entire sector, the juniors' low-cost projects remain attractive. We draw investors' attention to cash generative companies, Eastern Platinum and Sylvania Resources, and those about to start producing, Platinum Australia, Platmin and Ridge Mining.

### Platinum plummets, but expect a recovery

With the exception of 2006, the platinum market has been in deficit every year since 1999, largely due to growth in autocatalyst demand for platinum and supply-side constraints in South Africa, the largest producer. Following a sharp slowdown in vehicle production, expectations of weaker autocatalyst demand and platinum sales from ETFs have driven platinum from an all-time high of US\$2,250/oz in March 2008 to around US\$850/oz currently. Nevertheless, our analysis of fundamental supply/demand suggests this has gone too far. Excluding the affect of ETFs, we forecast a small deficit in 2009 and an average platinum price of US\$1,350/oz.

### Five criteria to look for: Eastern Platinum satisfies them all

We believe there are five key criteria by which companies in this sector can be assessed: (1) **producing assets**, without which companies will continue to rely on external sources of funding; (2) **shallow resources**, which will benefit companies from both a cost and safety perspective; (3) **western limb** of the Bushveld Complex, with its better platinum grades and established mining infrastructure; (4) **access to infrastructure**, which will mitigate South Africa's power, water and skills shortages; and (5) **vertical integration**, which is key to developing a successful mine-to-market business. Of the 10 companies profiled, Eastern Platinum satisfies all five criteria.

### Companies profiled: 10 companies with prospects

The platinum sector is dominated by two majors, three mid-tier producers and approximately 25 other companies at various stages of exploration, development and production. Of these 25, we profile 10 companies in the junior platinum sector that we believe should be included in a portfolio of platinum investments, namely Eastern Platinum, Jubilee Platinum, Nkwe Platinum, Platmin, Ridge Mining, Wesizwe Platinum, Platinum Group Metals, Platinum Australia, Sylvania Resources and Braemore Resources.

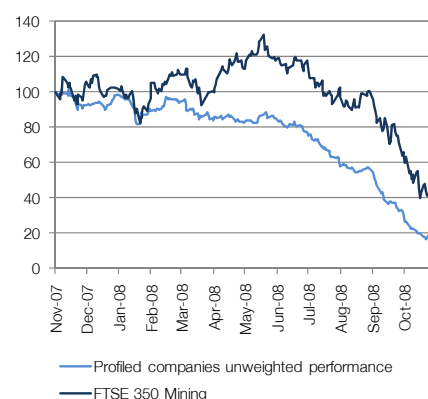
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## Investment summary: Platinum prospects

### Introduction: Price floor presents an entry opportunity

The sharp fall in platinum prices over the past few months highlights the impact of the global slowdown in vehicle production and expectations of lower autocatalyst demand. In addition, we believe the weakening price has been exacerbated by sales of platinum from exchange traded funds (ETFs). Notwithstanding lower demand, we expect the trend of declining South African platinum output since 2006 to continue into 2009 and we suggest that expectations of increased supply from the country are perhaps premature.

With limited above ground stocks (unlike gold), the platinum market is particularly tight and we therefore expect muted supply growth to lift the price from its recent floor of around US\$800/oz to an average of US\$1,350 in 2009. We believe that at current platinum prices, investors have a window of opportunity for an inexpensive entry into the junior sector with considerable upside prospects.

#### Exhibit 1: Peer comparison of profiled companies

Note: As at 11 November 2008

Company	Listing	Market cap (US\$m)	EV (US\$m)	Attributable resources (3PGM+Au)	EV/oz
Braemore Resources	AIM, JSE	31.8	29.8	0.00	N/A
Eastern Platinum	AIM, TSX, JSE	205.2	68.3	91.91	0.74
Jubilee Platinum	AIM, JSE	24.5	9.8	40.95	0.24
Nkwe Platinum	ASX	16.3	8.9	32.37	0.28
Platinum Australia	AIM, ASX	103.6	94.5	5.03	18.76
Platinum Group Metals	TSX, AMEX	53.8	46.5	8.86	5.25
Platmin	AIM, TSX	84.2	24.5	20.93	1.17
Ridge Mining	AIM	49.2	41.4	18.31	2.26
Sylvania Resources	AIM, ASX	103.9	64.2	2.86	22.42
Wesizwe Platinum	JSE	137.4	114.4	12.94	8.84

Source: Edison Investment Research, company reports, Bloomberg

Within the global platinum sector, there are approximately 25 companies at various stages of development. Of these 25, Anglo Platinum and Impala Platinum are by far the largest, while Lonmin, Northam Platinum and Aquarius Platinum represent the mid-tier producers. Furthermore, approximately 10 companies are at very early stages of development and without significant platinum production or resources. In this report, we profile the remaining 10 companies that we believe stand to benefit from a future price recovery and draw investors' attention to those with shallow, cash generative assets, namely Eastern Platinum and Sylvania Resources, and those about to go into production, namely Platinum Australia, Platmin and Ridge Mining. Companies with significant platinum resources, but some way from production, include Nkwe Platinum, Platinum Group Metals, Jubilee Platinum and Wesizwe Platinum. With neither production nor platinum resources, Braemore Resources is developing unique smelting technology capable of treating high-chrome ores.

The emergence of this junior platinum sector in South Africa followed the introduction of the Mineral and Petroleum Resources Development Act, 2002, and a new policy of "use it or lose it", which forced the majors to give up idle ground to new entrants.

## Sector positioning: Five key criteria

In this report, we highlight five key criteria that we believe will differentiate successful companies in the junior platinum sector.

### 1) Producing assets

With a mine in production, companies should start generating cash and becoming profitable. Companies in this position are therefore less likely to need to raise additional equity to fund ongoing operations, minimising the dilution risk for existing shareholders. In addition, shareholders should start to receive dividends once capital development costs have been paid off. Of the companies profiled, Eastern Platinum has a producing mine, while Platinum Australia, Platmin and Ridge Mining are within months of first production. Without a mine, but producing platinum from tailings and toll-smelting, respectively, are Sylvania Resources and Braemore Resources.

### 2) Shallow resources

Mining costs increase with depth. Therefore, companies with shallow resources stand to benefit from both a cost and safety perspective. While the majority of companies profiled have relatively shallow resources, Platmin and Sylvania Resources have producing operations entirely at surface.

### 3) Western limb of Bushveld Complex

Although the eastern limb of the Bushveld Complex is the focus of many new developments in the sector, the more established western limb has better infrastructure, more skilled labour and greater reserves of higher-grade Merensky Reef. For this reason, projects on the western limb should be easier and less expensive to get into production. Of our profiled companies, Eastern Platinum operates a mine on the western limb, while Platmin is about to bring one into production. In addition, Platinum Group Metals and Wesizwe Platinum both have significant western limb projects under development.

### 4) Access to infrastructure

South Africa's rapidly developing economy has put pressure on scarce resources, including power, water and skilled labour. Fortunately for juniors with smaller operations, their demands on available resources are typically lower than the majors and therefore less likely to be impacted by rationing. Nevertheless, all of the companies profiled have taken steps to develop contingency plans to mitigate potential power outages.

### 5) Vertical integration

Vertically integrated mining companies capture a larger proportion of the revenue from mine to market. Although most juniors are not vertically integrated, Eastern Platinum stands out in this regard.

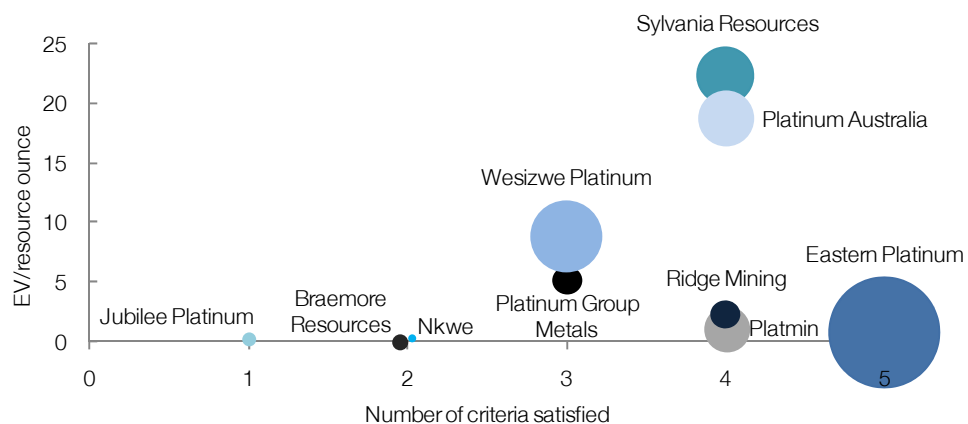
## Class of 2009: Eastern Platinum 1<sup>st</sup>, Ridge Mining 2<sup>nd</sup>, Platmin 3<sup>rd</sup>

On an absolute basis, all 10 companies we profile should weather the current environment of low platinum prices and stand to benefit from their low-cost profiles and a recovery in the platinum price. However, these 10 companies can be further divided into three main groups, namely those in production (Eastern Platinum and Sylvania Resources), those about to start producing (Platinum Australia, Platmin and Ridge Mining) and those with projects under exploration and development (Nkwe Platinum, Wesizwe Platinum, Platinum Group Metals, Braemore Resources and Jubilee Platinum).

Overall, Eastern Platinum leads the pack in terms of sector positioning and EV/resource ounce valuation. In addition, the company has made good progress at its Crocodile River Mine where production has increased and operating costs reduced. In terms of the three emerging producers, the market seems to be ignoring the progress that Platmin and Ridge Mining are making and we expect an upward re-rating of these stocks over the next six months as they entrench their producer status. However, investors may be deterred by Platmin's high degree of leverage.

### Exhibit 2: Junior platinum sector valuation

Note: Label size relative to market capitalisation



Source: Edison Investment Research

Of the four explorers and developers, Jubilee Platinum trails its peers and satisfies the fewest of our criteria, but is cheap on an EV/resource ounce basis, as is Nkwe Platinum, which trades only marginally above its cash position. Platinum Group Metals leads the explorers and developers in terms of both the number of criteria satisfied and its EV/resource ounce valuation.

Focused on developing the ConRoast smelting technology, Braemore Resources has yet to fulfil its ambitions of becoming an explorer and producer, but is actively looking for upstream opportunities. If and when this happens, we expect Braemore's share price to rerate.

## **Sensitivities**

### **Platinum price**

Overall, the platinum price is the most significant determinant of value for companies in this sector. Although the price has come down from its US\$2,250/oz high in March this year, we believe it has hit a floor at US\$800/oz. We forecast a recovery, with an average price of US\$1,350/oz next year, remaining at around this level until the end of 2012. There is further price protection for those companies that have hedged a portion of their production, most notably Ridge Mining and Platinum Australia.

### **Capital and operating costs increase**

The cost of both developing and operating a platinum mine has escalated considerably over the last few years. With a marginal cost of production of approximately US\$1,000/oz, many of South Africa's large, deeper, high-cost mines will be producing at a loss and may start reducing production from low-grade ore. However, juniors with shallow, low-cost mines are unlikely to reduce output, even in the current price environment. With typical operating costs of around US\$500/oz, they still stand to benefit from a healthy margin on the current price.

### **The rand/US dollar exchange rate**

The majority of companies' fixed and variable costs as well as some debt is incurred in South African rand (ZAR), which over the last six months has fallen against the dollar from ZAR7.80 at the end of June to ZAR10.30 in November. This has provided companies with some respite from falling platinum prices, although offset partly by higher local fuel costs.

### **Delays to regulatory approvals**

A number of the companies we profile are awaiting South African regulatory approvals for some aspect of development or mining. While the authorities have recently sped up the process of regulatory approvals, there remain capacity constraints within key departments and, as such, bureaucratic delays may impact development and production timelines.

### **Power and Eskom**

While the reserve margin between electricity supply and demand remains precarious, Eskom is focusing on bringing several new projects online over the next 10 years. Since 2005, over 2,500MW has already been commissioned. In 2009, expansion of new open cycle gas turbines will generate a further 1,000MW while a further 3,800MW will be produced from three previously mothballed coal-fired power stations. In addition, supply to the platinum sector will be strengthened with a new 400kV transmission line and three new substations.



## 1. Supply remains tight...

South Africa accounts for around 80% of global platinum supply. However since 2006, South African mine productivity and platinum supply have fallen, despite rising metal prices. The industry has responded by developing new mines and expanding existing ones. As such, the trend of falling supply is expected to reverse in 2009, albeit at slower rates than companies may previously have hoped for. By the end of 2010, we expect South African supply to recover to 2006 levels.

### ...But should start to grow

Platinum supply this year will amount to approximately 6 million ounces (Moz) pa, almost a million ounces less than in 2006. As many of South Africa's large, deeper platinum mines get older, power outages and safety issues have negatively impacted production growth. Nevertheless, there has been a concerted effort by the industry to increase supply with the development of several new projects and the expansion of some existing operations. However, as a result of the current low platinum price and delays to bringing new supply online, we expect a marginal increase in South African supply from 4.7Moz this year to 4.8Moz next year. Meanwhile, production from the rest of the world is expected to stay steady at around 200 thousand ounces (koz) less than 2007 levels.

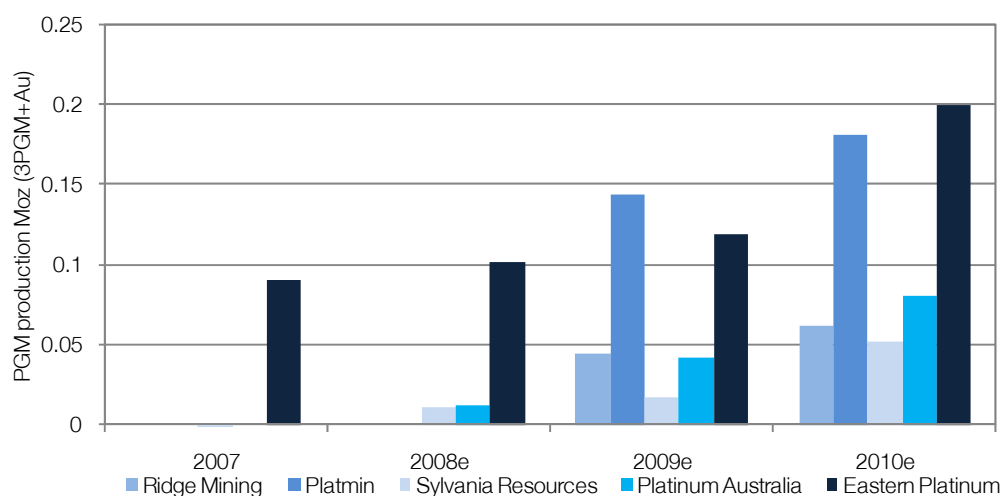
**Exhibit 3: Summary of regional platinum supply forecasts**

Moz	2006	2007	2008e	2009e	2010e	2011e	2012e	2013e	2014e
South Africa	5.3	5.0	4.7	4.8	5.2	5.4	5.9	6.5	6.9
Russia	0.9	0.9	0.7	0.7	0.7	0.7	0.7	0.7	0.7
North America	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Other	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.3
<b>Total</b>	<b>6.8</b>	<b>6.5</b>	<b>6.0</b>	<b>6.1</b>	<b>6.5</b>	<b>6.8</b>	<b>7.3</b>	<b>7.9</b>	<b>8.3</b>

Source: Edison Investment Research, Johnson Matthey

Of the companies we profile, Eastern Platinum is increasing supply from approximately 120koz 3PGM+Au this year to 140koz in 2009, while Platinum Australia, Platmin and Ridge Mining are all bringing on new supply in 2009. Meanwhile Sylvania Resources' tailings retreatment operations are expected to double output from approximately 150koz this year to 300koz in 2009. The remaining five companies profiled are at development stage and will not be in production by 2009.

**Exhibit 4: Forecast production from companies profiled**



Source: Edison Investment Research, company reports

## 2. Bushveld dominates supply

South Africa's Bushveld Igneous Complex accounts for approximately 80% of global platinum supply. While there have been a number of well-publicised issues within the industry, it remains the world's primary source of platinum group metals. At forecast production rates, there are over 40 years of reserves to be mined from this significant deposit. All the companies we profile in this report operate in the Bushveld Complex.

### Over 40 years of reserves to be mined

Platinum group metals (PGMs) are typically associated with nickel-copper sulphide mineralisation in igneous rocks. Depending on the relative grades of precious and base metals, PGMs are either produced as a primary product or as by-products to nickel and copper.

The Bushveld Complex (see Exhibit 8, page 10) is the world's largest primary source of PGMs and contains over 75% and 50% of the world's platinum and palladium resources, respectively. The Bushveld Complex is made up of an eastern and a western limb, with a smaller, northern limb, and covers over 65,000km<sup>2</sup>. The deposit contains three primary ore bodies, namely the Merensky Reef, the UG2 and the Platreef. At surface, the Merensky Reef and UG2 extend for over 300km along each of the western and eastern limbs, while the Platreef extends for over 30km along the northern limb. Discovered in the 1920s, the Merensky Reef has higher platinum grades than the UG2 and was the sole source of South Africa's PGMs until the 1970s. Since then, extraction has focused on the UG2, which now accounts for roughly 75% of all production. The UG2 is particularly important in the eastern limb, where its PGM resources exceed those of the Merensky Reef. These two reefs are sub-parallel, while the UG2 is anywhere between 40m and 400m below the Merensky Reef. With the exception of Braemore Resources and Sylvania Resources, the companies we profile are either exploring or producing from the Merensky and UG2 reefs on both the western and eastern limbs.

#### Exhibit 5: Proven and probable reserves of the Bushveld Igneous Complex

Note: Reserves based on company estimates and up to a depth of 2,000m. Grades reported up to 1,200m.

	Platinum reserves (Moz)	Platinum grade (g/t)	Palladium reserves (Moz)	Palladium grade (g/t)
<b>Eastern limb</b>				
Merensky reef	10.9	2.4 – 3.2	4.8	1.4
UG2	38.0	1.8 – 2.4	32.7	1.6 – 2.0
<b>Western limb</b>				
Merensky reef	66.2	2.5 – 3.2	30.6	1.2 – 1.5
UG2	78.3	2.1 – 2.4	36.7	1.0 – 2.0
<b>Northern limb</b>				
Platreef	9.9	1.3 – 1.8	11.3	1.4 – 2.0
<b>Total</b>	<b>203.3</b>		<b>116.1</b>	

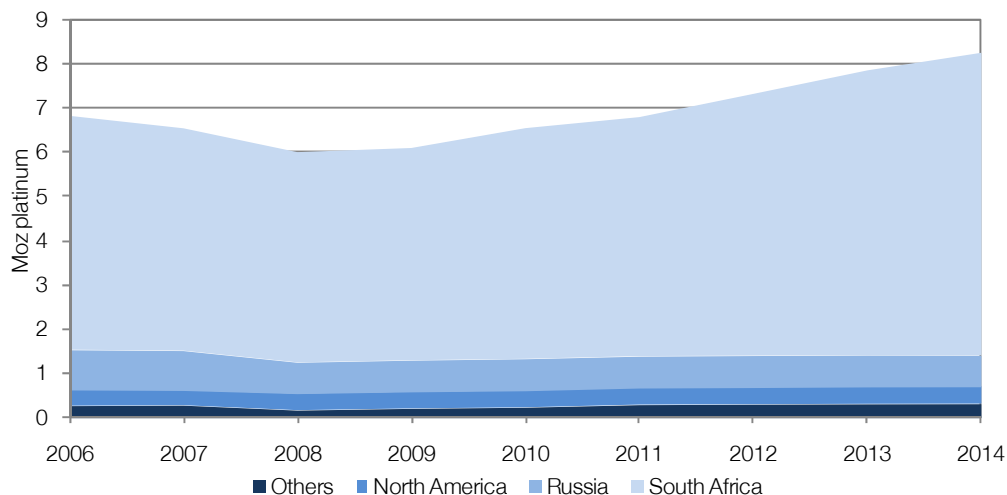
Source: South African Journal of Geology

The total resource of the Bushveld Complex has been estimated at 800Moz platinum and 500Moz palladium, up to a depth of 1,200m. With company reserves estimated at 400Moz, there remain over 40 years of reserves to be mined at planned annual production rates of 10Moz (3PGM+Au).

## Non-South African supply stays static

Zimbabwe's Great Dyke, the world's second most important PGM resource, produced 175koz of platinum from two mines last year and we do not expect this to increase in 2009. The current political and economic issues in Zimbabwe continue to hamper ongoing production and exploration.

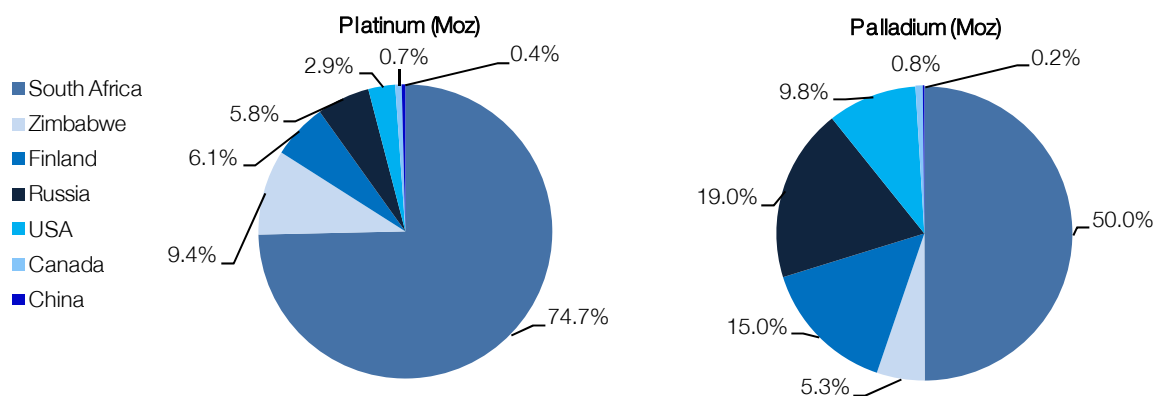
**Exhibit 6: Forecast world platinum production**



Source: Edison Investment Research, company reports, Johnson Matthey

Other economically important PGM deposits include the Stillwater and Lac des Isles deposits in North America as well as Norilsk Nickel's mines on the Taimyr and Kola peninsulas in Russia. In the case of certain base metal producers, revenue from PGM by-products can be significant, but relatively inelastic, as production is geared towards the nickel and copper markets. Examples of this include Vale Inco's Voisey's Bay and Sudbury mines in Canada, the Duluth Complex in the US, the Jinchuan nickel mine in China as well as several smaller intrusions in Finland. As Exhibit 7 suggests, PGM production from non-South African sources is still relatively limited. Braemore Resources, Platinum Australia and Jubilee Platinum have some non-South African projects, although none of these is in production.

**Exhibit 7: Summary of world platinum and palladium resources**

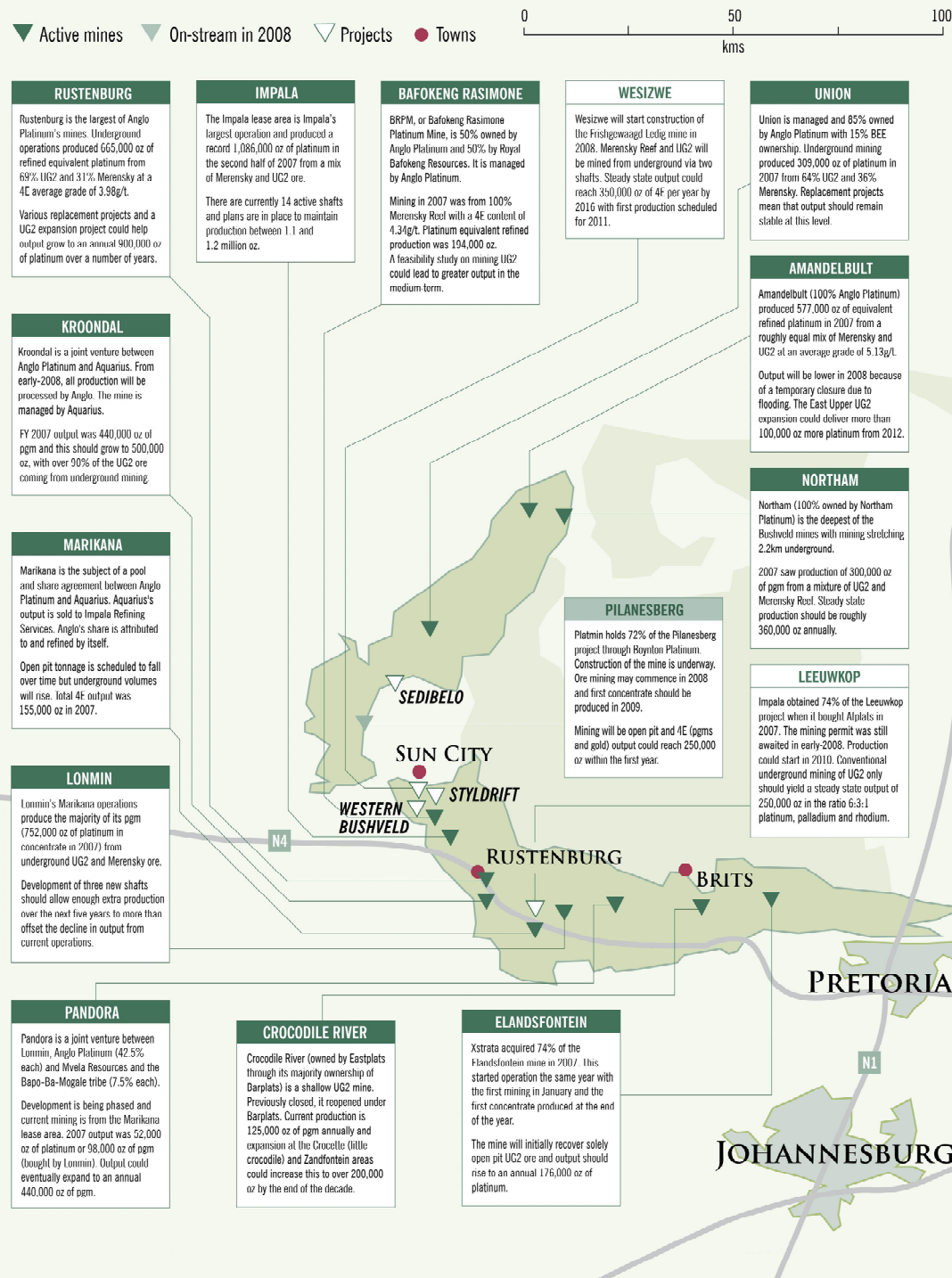


Source: South African Journal of Geology

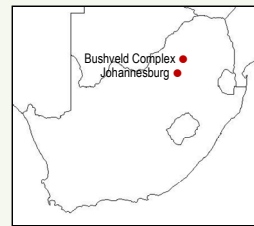
## Exhibit 8: Platinum mines and projects in the Bushveld Complex

# SOUTH AFRICAN PGM PRODUCTION

This map provides details of all pgm mines operating or due to operate within 2008 on South Africa's Bushveld Complex. Locations and some information are also provided on some of the many potential projects in this area.



Source: Johnson Matthey



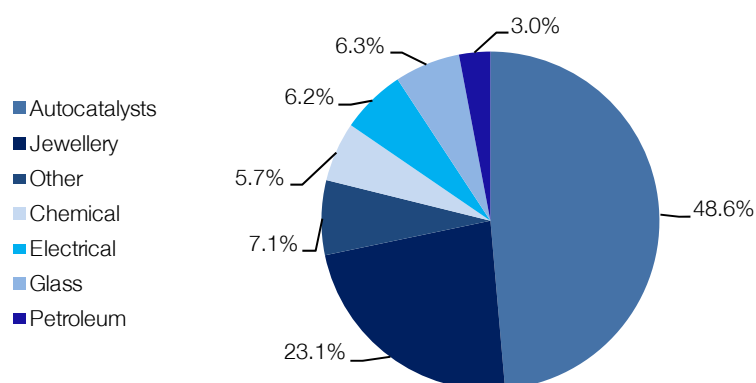
### 3. Demand hit by slowdown in vehicle production

Autocatalysts and jewellery account for roughly 50% and 25% of total platinum demand, respectively. Autocatalyst demand is largely a function of global vehicle production, which has recently seen a sharp slowdown and is expected to fall further in 2009. Jewellery demand is very elastic and correlates inversely with price, suggesting consumers will take advantage of the current situation. The remaining demand for platinum comes from the industrial sector and is also expected to fall in 2009. However, by 2010 we expect demand to start increasing again, although it would not be until the following year (2011) that platinum demand recovers to 2007 levels.

#### Demand slows in 2009

Like gold, platinum is a precious metal with jewellery appeal, but differs in that it has more industrial applications. It is used primarily for autocatalysts, and also in the chemical, electrical and petrochemical sectors. With its unique catalytic properties, platinum is widely used in vehicles to convert combustion exhausts to less harmful emission products.

**Exhibit 9: Uses of platinum in 2007**



Source: Johnson Matthey

In response to the credit crisis and fears of a recession, growth in global vehicle production has slowed dramatically, especially in North America. As a result, we expect autocatalyst demand for platinum to fall in 2009, while industrial demand for the metal is also likely to decrease. On the back of these expectations of weakening demand, heavy selling in Q308 by a London-based exchange traded fund (ETF), has exacerbated the recent fall in the platinum price. With an inverse correlation to price, jewellery is the only element of demand that we expect to increase next year.

**Exhibit 10: Platinum demand forecasts**

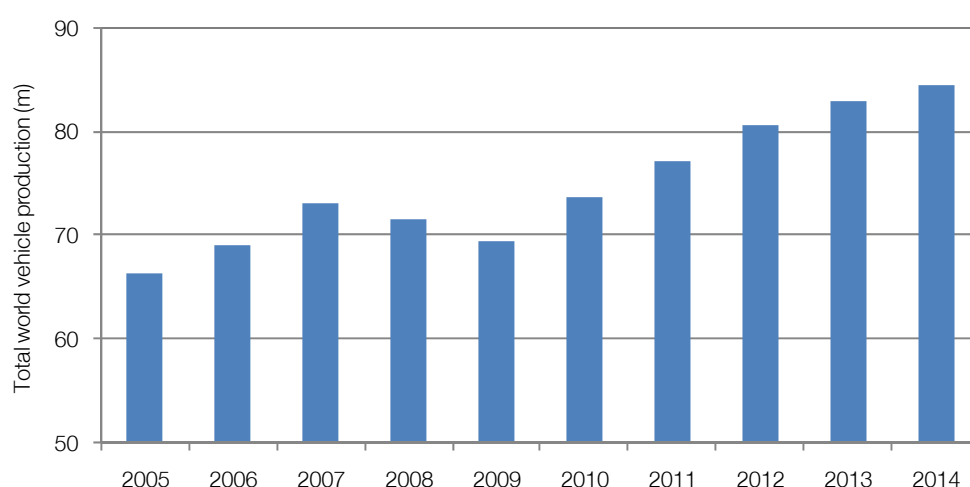
	2006	2007	2008e	2009e	2010e	2011e	2012e	2013e	2014e
Autocatalyst (net)	3.0	3.3	3.4	3.2	3.6	4.0	4.4	4.7	4.8
Jewellery	1.6	1.6	1.1	1.3	1.3	1.2	1.3	1.4	1.5
Other	1.8	2.1	2.0	1.8	1.8	1.8	1.8	1.8	1.8
Total	6.4	7.0	6.5	6.3	6.7	7.0	7.5	7.9	8.1

Source: Edison Investment Research, Johnson Matthey

## Autocatalysts drive demand

Total autocatalyst demand for platinum has increased every year since 1999. However, as the current economic downturn impacts vehicle sales, we expect total autocatalyst demand to fall in 2009. Nonetheless, stricter vehicle emissions regulations around the world, a growing proportion of diesel vehicle sales in Europe and growth in vehicle sales in non-US and European markets will continue to drive the demand for platinum in autocatalysts. As such, we expect autocatalyst demand to start increasing again from 2010. Although vehicle emission standards in emerging economies are less developed than the west's, we believe legislation will become stricter, especially as the environmental and health impacts of emissions from increased vehicle numbers become evident.

**Exhibit 11: Total world vehicle production forecasts**



Source: CSM Worldwide, Edison Investment Research

## US led the way...

In 2000, the US Environmental Protection Agency introduced emission standards to control air pollution from new light vehicles. The standards were phased in from 2004 and led to much of the early growth in platinum demand over the last four years. Since then, North American vehicle production has slumped and is only expected to recover to 2007 levels by 2013. Although all new heavy vehicles in the US will be required to fit autocatalysts by 2009, this is a relatively small proportion (<5%) of the country's total vehicle production. As such, North America is not expected to contribute to significant growth in platinum demand over the next five years.

**Exhibit 12: Phase-in schedule for NOx emission standards in the US**

Year	Cars and light trucks	Heavier trucks
2004	25%	-
2005	50%	-
2006	75%	-
2007	100%	-
2008	100%	50%
2009	100%	100%

Source: US Environmental Protection Agency



## ...But Europe takes over

In Europe, emission standards were first introduced in 1993 and have continued to become stricter since then. The Euro 5 and the even stricter Euro 6 standards will be introduced over the next seven years and focus on a reduction in emissions from diesel (and to a lesser extent, gasoline) vehicles. It is worth noting that autocatalysts for diesel vehicles contain more platinum than those used in gasoline vehicles (in which palladium substitutes more effectively). On 1 September 2009, vehicles not compliant with Regulation (EC) No 715/2007 and Euro 5 emission standards will be refused EU or national approval, while larger vehicles have a further year within which to comply. After an initial period of two years, vehicles not complying with Euro 5 will be prohibited from registration, sale or entry into service. Stricter Euro 6 standards will be subsequently introduced in September 2014, while the sale, registration or entry into service of non-compliant vehicles will be prohibited a year later.

### Exhibit 13: Schedule of Euro 5 and Euro 6 standards

Note: Category N1: vehicles used for the carriage of goods and having a maximum weight not exceeding 3.75 metric tonnes. Category N2: Vehicles used for the carriage of goods and having a maximum weight exceeding 3.75 but not exceeding 12 metric tonnes.

Date	Vehicles	Standard	Impact of non-compliance with Regulation (EC) No 715/2007
1 September 2009	New vehicles	Euro 5	Refuse to grant EC/national type approval
1 September 2010	New category N1 (class II and II) and N2 vehicles	Euro 5	Refuse to grant EC/national type approval
1 January 2011	New vehicles	Euro 5	Prohibit registration, sale or entry into service
1 January 2012	New category N1 (class II and II) and N2 vehicles and vehicles designed to meet specific social needs	Euro 5	Prohibit registration, sale or entry into service
1 September 2014	New vehicles	Euro 6	Refuse to grant EC/national type approval
1 September 2015	New category N1 (class II and II) and N2 vehicles	Euro 6	Refuse to grant EC/national type approval
1 September 2015	New vehicles	Euro 6	Prohibit registration, sale or entry into service
1 September 2016	New category N1 (class II and II) and N2 vehicles	Euro 6	Prohibit registration, sale or entry into service

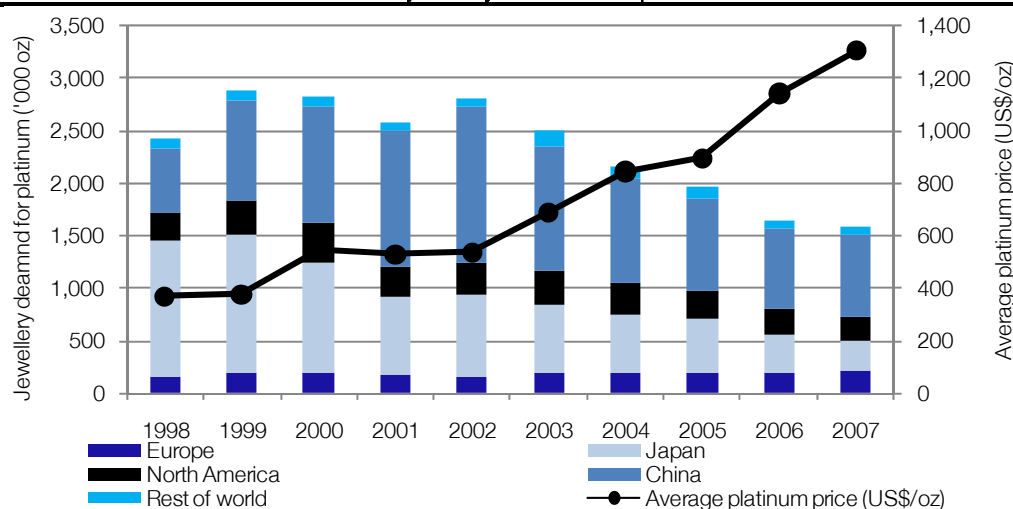
Source: European Communities

The implementation of vehicle emission standards in Europe has lagged behind North America. Over the next seven years, all vehicles sold, registered or put to use in Europe will be required to comply with these emission standards. Although European vehicle production has recently slowed down, we do not expect this downturn to be as severe as North America's. Given the new European vehicle emission standards and more robust demand, we expect platinum demand from European vehicle manufacturers to increase over the next five years.

## Jewellery demand shows strong price elasticity

Platinum's use in jewellery has grown from almost nil at the beginning of the 20th century to 1.6Moz last year. Most of this growth has taken place over the last 20 years, primarily from consumers in Japan who accounted for 24% of world platinum demand in 1998. Since then, China has taken over as the largest consumer of platinum jewellery. As one would expect, jewellery demand is particularly sensitive to price, with an almost perfect negative correlation between the two. As platinum prices doubled over the last five years, jewellery demand has almost halved. The recent fall in the platinum price is therefore likely to promote jewellery demand, especially from China.

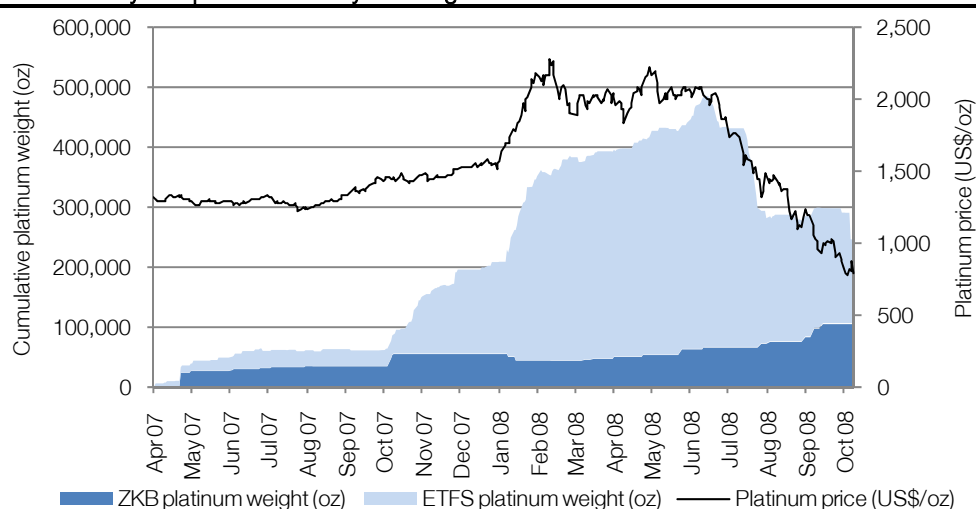


**Exhibit 14: Inverse correlation between jewellery demand and price**

Source: Johnson Matthey

## Exchange traded funds: Price volatility

Unlike gold, there have historically been very limited above ground stocks of platinum. This changed in April 2007 when London-based ETF Securities (ETFS) launched an exchange traded commodity fund backed by physical platinum, which is neither loaned nor sold but securely held by the fund. From a modest start of 31,620oz (1t) in May 2007, large movements in ETF stocks have served to increase price volatility. Platinum's stellar performance in the first half of 2008 was partly in response to metal buying from the ETFS fund, the inventories of which peaked at 418,247oz (13t) in the first week of July 2008. Since then, this fund shed over 200,000oz (6.2t), as the platinum price dropped. At the beginning of November 2008, the ETFS fund held 136,265oz (4.2t) of platinum. In comparison, the levels of platinum held by the Swiss Zürcher Kantonalbank (ZKB) have continued to grow at slower, steadier rates without the massive sell-off experienced by its London counterpart. ZKB held 105,358oz (3.3t) of platinum at the beginning of November 2008. We believe that as the platinum price recovers into 2009, increased buying from these ETFs could increase price volatility, potentially magnifying the upside.

**Exhibit 15: Physical platinum held by exchange traded funds**

Source: Edison Investment Research, ETF Securities, Zürcher Kantonalbank, Johnson Matthey

## Industrial uses: Growth to slow

Beyond the well-documented demand from autocatalysts, jewellery and more recently ETFs, platinum is also used for various industrial applications within the glass, chemical, electrical and petrochemical sectors. In 1998, combined demand from these sectors was 925,000oz (28.8t) increasing to 1,450,000oz (45.1t) in 2007, equating to a compound annual growth rate of 5%. The biggest growth came from China, where annual demand increased 13% between 1998 and 2007. We have modelled industrial demand in 2008 and beyond on our assumption that it falls 7.5% from 2007 levels in year one and then remains constant.

## 4. Palladium: Generates less revenue

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Palladium typically trades at a quarter of platinum's price. Compared to platinum, eastern limb ores generally contain more palladium and are therefore less valuable than those mined from the western limb. This is one of the reasons we suggest investors look for companies with western limb assets, such as Eastern Platinum, Platmin, Wesizwe Platinum and Platinum Group Metals.

### Palladium hits price floor

Palladium differs from platinum in a number of respects, but most notably its price and the presence of above ground stocks (albeit of unknown quantity). It is able to partially substitute for platinum in autocatalysts. The market for these two metals is therefore well-correlated. After peaking briefly at US\$580/oz in February this year, the palladium price has tracked platinum's fall and traded at US\$170/oz in October 2008 before recovering to US\$225/oz.

### 2009: US\$330/oz palladium

Over the last 10 years, industrial demand for palladium has shrunk by roughly 2% a year and we expect this trend to continue into 2009. Nevertheless, in the longer term, palladium demand should recover as emerging economy sales of gasoline vehicles (which use more palladium in their autocatalysts) pick up again. Assuming it tracks platinum's recovery into 2009, we suggest an average price for palladium of around US\$330/oz.

### Russia's influence continues, but for how much longer?

The big question facing the palladium market relates to the extent and attrition rate of above-ground stocks held by Russia, the world's largest producer, accounting for roughly 50% of global supply. The Norilsk Complex in northern Siberia is the primary source of Russian palladium where it is mined as a by-product to nickel. During the 1970s and 1980s, this metal was stockpiled by the Soviet government and subsequent irregular state sales continue to keep the market in uncertainty. Although pre-2005 palladium production data from Norilsk Nickel are not available, sales in 2005, 2006 and 2007 have been relatively constant (3,235koz, 3,220koz and 3,126koz, respectively). Russia's total annual contribution to global palladium sales has been falling at 2.7% pa since 1998. While commentary on Russian stocks remains speculative, we would suggest that palladium supply from stockpiles will continue to fall and palladium will, in future, trade at less of a discount to platinum.

## 5. Window of opportunity as platinum recovers

With the exception of 2006, the platinum market has been in deficit every year since 1999.

Although the fall in the platinum price in the second half of 2008 highlights the impact of a slowdown in global vehicle production and autocatalyst demand, we expect muted supply-side growth from South Africa to keep the market in deficit until 2012. Having recently hit the floor at US\$800/oz, the platinum price has started to increase and is expected to recover into 2009, when we forecast an average price of US\$1,350/oz. As such, we believe investors have a window of opportunity to buy into the platinum sector inexpensively and benefit from a recovery in the platinum price over the next three years.

### Platinum hits a floor at US\$800/oz, and starts to recover

After the spectacular rise and fall of platinum in 2008, we expect the price to recover over the next three years, as the market remains in deficit until 2012. If all new postulated supply from South Africa materialises, the deficit would reduce to nil in 2013 when we expect an average price of US\$1,200/oz. Insofar as there are delays or disruptions to this new supply, we expect a higher price.

#### Exhibit 16: Edison's forecasts of the platinum deficit and average price (US/oz)

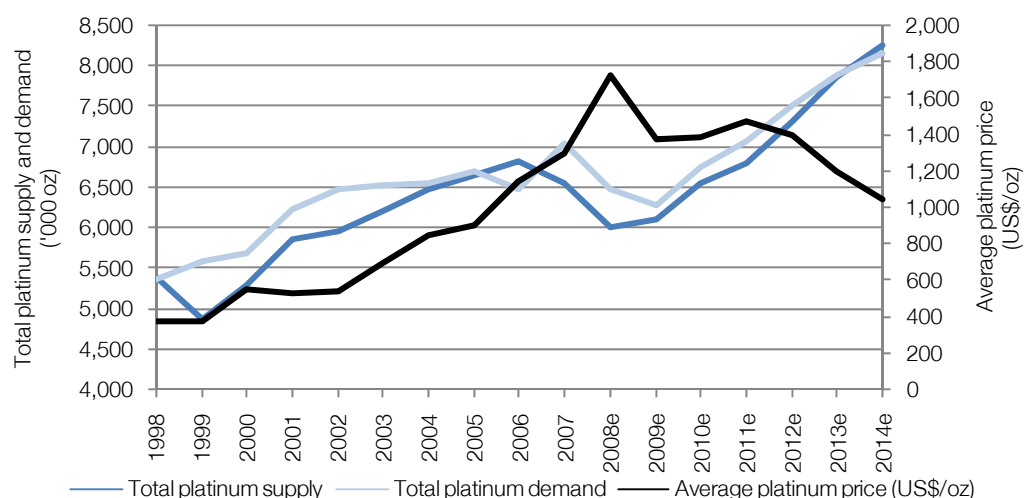
Note: Average price error of estimation US\$184/oz

'000 oz	2006	2007	2008e	2009e	2010e	2011e	2012e	2013e	2014e
Supply	6.8	6.5	6.0	6.1	6.5	6.8	7.3	7.9	8.3
Demand	6.5	7.0	6.5	6.3	6.7	7.0	7.5	7.9	8.1
Surplus/(Deficit)	0.3	(0.5)	(0.5)	(0.2)	(0.2)	(0.2)	(0.2)	0.0	0.2
Average price (US\$/oz)	1,143	1,304	1,730	1,350	1,390	1,480	1,400	1,200	1,050

Source: Edison Investment Research, Johnson Matthey

Companies currently producing (Eastern Platinum and Sylvania Resources) or with imminent production (Platinum Australia, Platmin and Ridge Mining), stand to benefit from a recovery in the platinum price over the next three years. However, with the prospect of softening prices from 2012, investors should be looking for companies developing shallow, low-cost operations.

#### Exhibit 17: Historic and forecast platinum supply, demand and average price

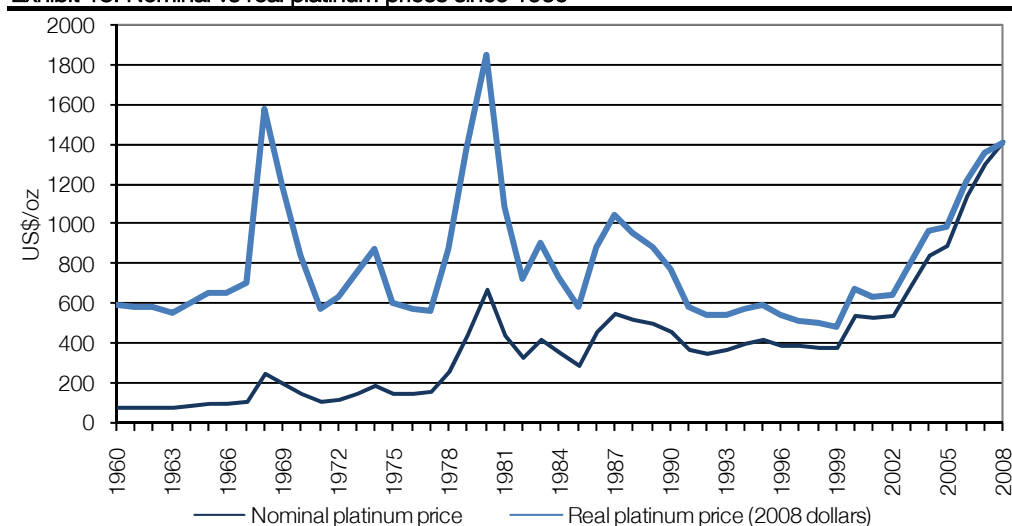


Source: Edison Investment Research, Johnson Matthey

## Platinum versus gold

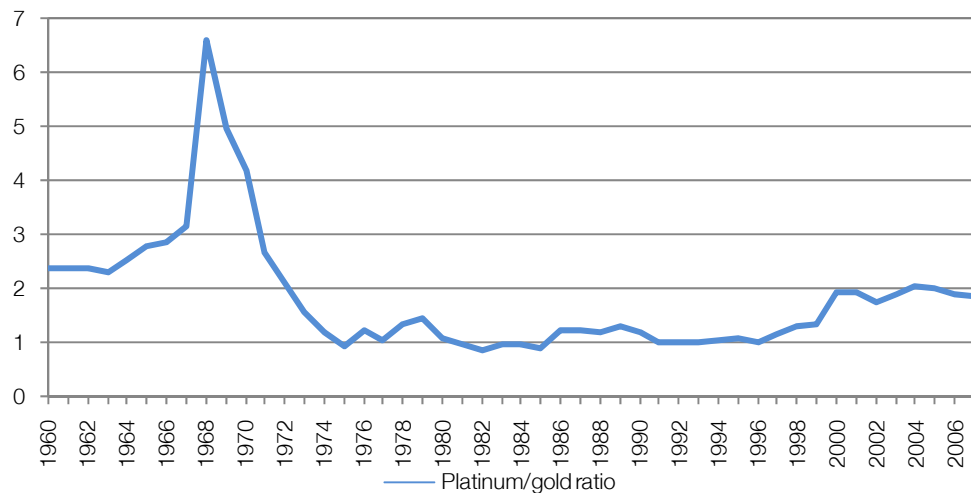
At the time of writing, the price of platinum is US\$830/oz, having averaged US\$1,740/oz for the year to date. Assuming that it remains at this level for the remainder of the year will mean an average price for the whole year of US\$1,416/oz. While high in comparison to the price of recent years, this price remains below previous peaks of US\$1,855/oz in 1980 and US\$1,588/oz in 1968 in real terms (Exhibit 18).

**Exhibit 18: Nominal vs real platinum prices since 1960**



Source: Edison Investment Research, [www.kitco.com](http://www.kitco.com), US Bureau of Labor

During the period from 1960 to the present, platinum has typically traded at a premium to the gold price of between one and three times. Not only can this ratio be seen to have existed in two distinct phases (as seen in Exhibit 19), but it has also exhibited significant volatility. From above two times in the early 1960s, the ratio leapt to its maximum of 6.58 times in 1968, as the platinum price anticipated the closing of the gold window in August 1971. This fell back down again after gold rose sharply in 1970s and since 1972 the platinum price has rarely traded above twice the level of the gold price. By contrast, it has traded below the level of the gold price on a number of occasions, including in 1975 and then again in the period 1981-1985, when the western world suffered a series of slowdowns and recessions in the wake of the second oil shock of the late 1970s. It slipped below the level of the gold price again in the late 1990s (albeit only for a short time so as not to be reflected in the annual average figures), reaching its lowest ever price in real terms, before once again anticipating the general commodity price rises of the current decade, from 1998 onwards.

**Exhibit 19: Platinum/gold price ratio since 1960**

Source: Edison Investment Research, [www.kitco.com](http://www.kitco.com), SA Chamber of Mines

Over the entire period the average platinum:gold price ratio has been 1.83 on an annual average basis. At the time of writing it is 1.14, reflecting platinum's sharp price declines since July 2008 in both absolute terms and relative to gold. Nevertheless, there is a poor correlation between the two, with a regression analysis returning a Pearson Product Moment Coefficient of -0.22.

### Platinum's relationship with oil

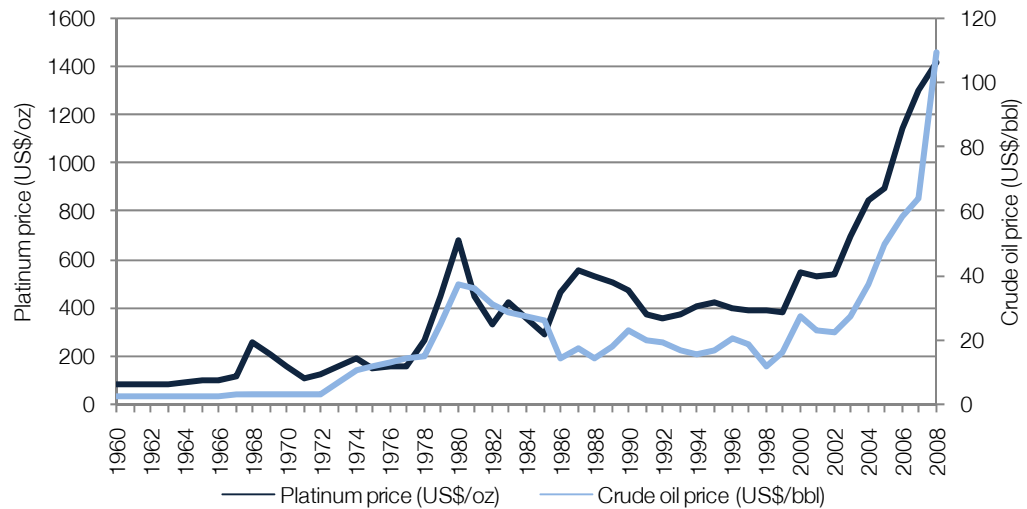
The price of platinum also correlates very closely with the price of oil. For the period since 1960, a regression analysis performed on the average annual price of platinum compared to the annual average price of crude oil returns a Pearson Product Moment Coefficient of 0.91. Given the amount of data used in the analysis, this is said to be significant at the 5% level. That is, there is less than a 5% probability that this correlation occurred by chance. The correct rationalisation for this correlation is probably that oil, in the form of both fuel and power, constitutes a very high proportion of the input costs (as much as 40%) of any mining operation. As a result, changes in the crude oil price have a large impact on the cost base of any mining operation. Thus, when the price of crude oil goes up, marginal producers are rendered unprofitable; either the platinum price goes up therefore or platinum production is squeezed out – tightening the supply-demand balance and thereby exerting upward pressure on the platinum price. The opposite effect occurs in the event of the oil price falling. As a result of this, it is possible to predict the price of platinum with respect to the price of oil, as shown in Exhibit 20.

**Exhibit 20: Relationship between oil and platinum**

Crude oil price (US\$/bbl)	50	60	70	80	90	100	125	150
Platinum price (US\$/oz)	918	1,089	1,260	1,430	1,602	1,773	2,201	2,628

Source: Edison Investment Research

At the time of writing, the price of crude oil price is US\$63.54/bbl, having averaged US\$109.33/bbl in the year to date. Assuming that it remains at its current level for the rest of the year, the full year average price will be US\$94.07/bbl. This implies platinum prices of US\$1,149/oz (at the time of writing), US\$1,933/oz (year-to-date average) and US\$1,672/oz (full-year price average), respectively.

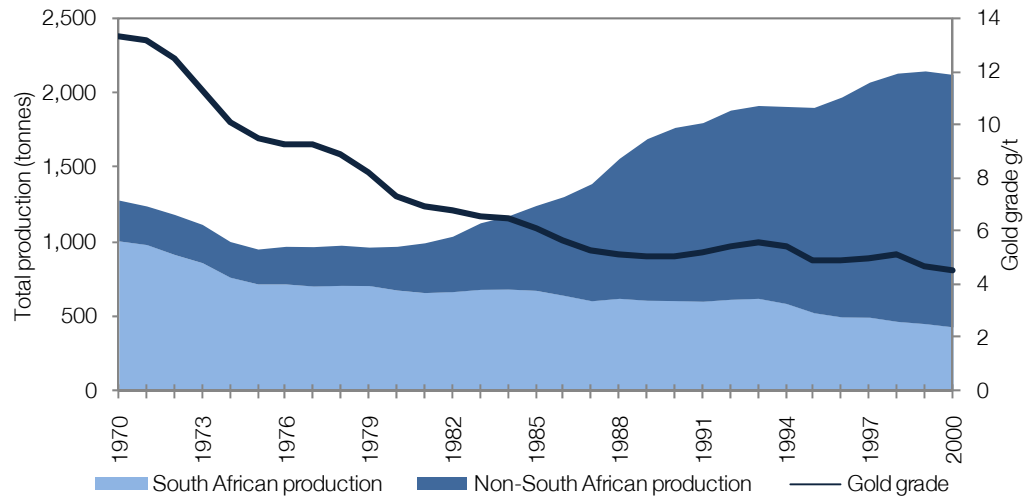
**Exhibit 21: Platinum and oil prices since 1960**

Source: Edison Investment Research, WRTG

### Future platinum: Parallels with the gold sector

While the markets for platinum and gold are quite distinct, it is nevertheless possible that the future development of the (relatively modern) platinum mining industry will mirror that of gold in an earlier era. Like platinum in the current time, the output of gold in 1971 was dominated by a single, large, high-grade producer in the form of South Africa, which produced 976 tonnes out of total western world production of 1,233t that year (ie 79% of the total). Many other low grade gold deposits were known to exist in the world, but remained uneconomic given the prevailing gold price at the time and the technology available to the industry.

At the time a great deal of research was conducted into the retreatment of old mining dumps to extract the remaining gold – not least in South Africa. As the price of gold rose throughout the 1970s, this technology was improved to the point at which it became commercial, finally allowing the economic development of the rest of the world's low grade, but extensive gold deposits at a time when margins at the mines of South Africa's Central Rand were under increasing pressure owing to the age and depth of mining operations there.

**Exhibit 22: South African vs non-South African gold supply**

Source: Edison Investment Research, South African Chamber of Mines

As a result, the next 20 years of mining operations were characterised by declining production from South Africa in both absolute and relative terms at the same time as average grades have also been declining. At the moment a comparable situation exists within the platinum industry in that output is similarly dominated by a single, high grade deposit in the form of South Africa's Bushveld Igneous Complex. In existence, but thus far undeveloped, are a growing number of relatively low grade, but extensive deposits in other parts of the world. While there is no indication that the exploitation of these deposits is imminent, growing demand coupled with improved processing technology and the eventual maturity of the Bushveld Complex means that they will inevitably become economic in due course of time. Noteworthy deposits in this respect include Platinum Australia's Kalplats project in the Kraaipan Greenstone Belt, Platina Resources' deposits in Greenland and Australia and the Russian deposits located in both the Urals and the Kola Peninsula.



## 6. Surplus smelter capacity to fall

Smelting is a key step in liberating and further concentrating PGMs from the concentrate produced by mines. South Africa's six PGM smelters are controlled by the majors and mid-tier producers, which treat their own concentrate and toll-treat on behalf of others. We estimate current surplus smelter capacity of approximately 5Moz, which will be exhausted by around 2015 as mine production increases over this period. An increase in the levels of high-chrome UG2 being smelted will also put pressure on current smelting capacity unless new smelting technologies, such as Braemore's ConRoast, are commercialised. Securing concentrate off-take agreements with smelters is therefore a key element of success for juniors in this sector, and one of the criteria investors should look for.

### Smelting more UG2: The chrome issue

Ore from platinum mines is typically crushed and fed into an on-site floatation circuit to produce a concentrate, which is trucked to one of six smelters in South Africa for further processing under an off-take agreement. Depending on the origin and nature of the concentrate, smelters charge producers a royalty, which anecdotal evidence suggests can be as high as 30%, although exact details are kept confidential by the industry.

#### Exhibit 23: Summary of South African PGM smelter capacity

Note: Minpro includes new production from the expansion of Impala's smelter due to be commissioned end 2008.

Company	Smelter	Location	Year of first production	Annual PGM production (Moz)
AngloPlatinum	Waternat	Rustenburg	1926	4.162
AngloPlatinum	Mortimer	Swartklip	1973	0.754
AngloPlatinum	Polokwane	Polokwane	2003	3.131
Impala	Minpro	Rustenburg	1969	4.935
Lonmin	Mooiwooi	Marikana	1971	1.758
Northam	Northam	Northam	1992	0.385
<b>Total</b>				<b>15.125</b>

Source: R.T Jones, An overview of Southern African PGM Smelting, Nickel and Cobalt 2005: Challenges in Extraction and Production, 44th Annual Conference of Metallurgists, Calgary, Alberta, Canada, 21-24 August 2005, pp.147-178.

With its higher platinum grades and lower chromite concentrations, ore from the Merensky Reef has historically been favoured by mining companies. However, as shallower Merensky Reef becomes depleted, and with the development of the Bushveld's eastern limb (where UG2 resources exceed Merensky resources), South Africa's smelters are now processing greater proportions of UG2 than ever before. While the UG2 contains less nickel and copper sulphides, its higher chromite content leads to a build up of chromite spinels within the furnaces of traditional 'six-in-line' smelters, making it more difficult to smelt. In the past, this has been dealt with by blending ores from the Merensky and UG2 reefs in order to reduce the overall chromite content. However, a time will come when miners will be producing mainly high-chromite UG2 and smelting technologies will need to be adapted accordingly.

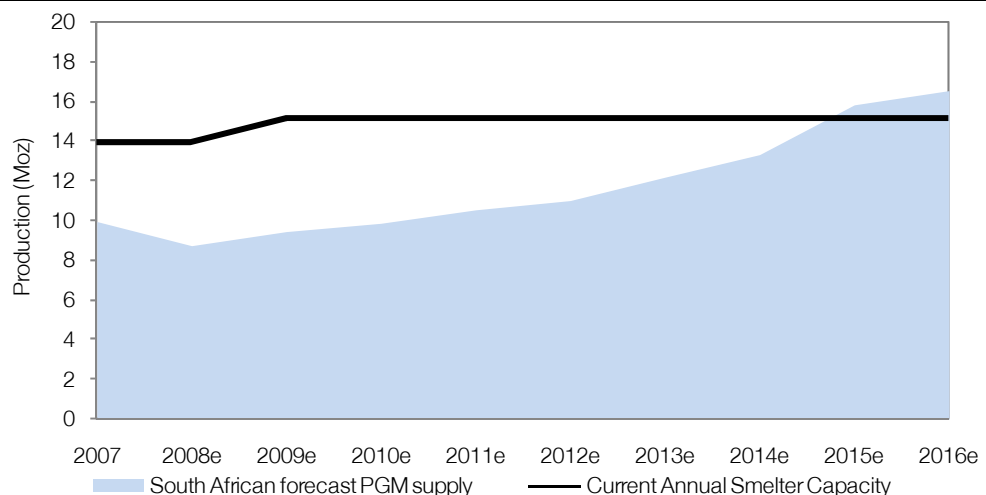
## ConRoast: Braemore Resources takes the lead

In the late 1980s, South Africa's national mineral research organisation, Mintek, commenced development of the ConRoast process capable of smelting high-chromite UG2 ore. This higher-temperature process is more flexible than traditional smelting techniques and can handle a variety of concentrates, without being affected by higher chromite concentrations. In 2000, Braemore Resources acquired the exclusive worldwide rights to the ConRoast process for a three-year period of development followed by an exclusive seven-year period of commercialisation. Once commercialised, we expect the ConRoast process to play an important role in South Africa's smelting sector. Braemore has recently expanded its Johannesburg-based trial smelter to 3.2MW and plans to develop a new 10MW smelter capable of treating high-chrome ores by 2011. For investors in Braemore Resources, South Africa's diminishing excess smelter capacity as well as the development of the eastern limb, presents a number of potential opportunities.

## Smelter capacity constrained

We estimate that capacity for PGM smelting in South Africa is currently around 15Moz per annum, although this is obviously impacted by feedstock grades, smelter availability and metallurgical recoveries. At this level of smelter capacity and taking into account our PGM production forecasts, South Africa's excess smelter capacity is expected to be exhausted by around 2015. As this occurs, the majors and mid-tier producers may be reluctant to continue to toll treat third party concentrate, especially if it is UG2, and their ability to smelt their own concentrate is compromised. Securing concentrate off-take agreements and access to smelting facilities is therefore a key element of success for juniors in this sector.

**Exhibit 24: Current South African smelter capacity and forecast PGM supply**



Source: Edison Investment Research, company reports

## **Vertical integration: Look for juniors with smelter access**

As new PGM production from several smaller companies comes online over the next five years, we expect to see the development of a handful of smaller (c 25MW) smelters with the ability to handle high-chromite UG2 ores without particularly onerous electricity consumption demands. For example, Platmin is considering the development of an independent smelter, while Braemore Resources is going ahead with plans to develop its 10MW ConRoast smelter. In addition, Eastern Platinum may decide to recommission the 20MW mothballed smelter at its Crocodile River Mine. On the eastern limb, Ridge Mining, along with JV partners Anglo Platinum and South Africa's Industrial Development Corporation, is also assessing the development of a smelter at its Sheba's Ridge project.

## 7. Valuation: Five key criteria to look for

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Investors in the junior platinum sector should look for five key criteria that we believe are likely to differentiate successful companies in the sector. These criteria include current or imminent production, shallow resources, a western limb location, access to infrastructure and vertical integration. Of the 10 companies profiled in this report, we draw investors' attention to cash generative Eastern Platinum and Sylvania Resources as well as those companies about to go into production, namely Platinum Australia, Platmin and Ridge Mining.

Junior platinum companies can be valued by any number of methods depending on their stage of development. For early-stage exploration and development companies with a portfolio of resource assets, an EV/resource ounce metric is appropriate. Using discounted cash flow (DCF) analysis and calculating the net present value (NPV) of companies about to go into production is another useful valuation method, although subject to a number of assumptions (including metals prices, production forecasts and operating costs). For long-life companies with earnings, using a P/E ratio is perhaps the easiest way to compare the expected returns of different companies. For the companies we profile, we have applied a combination of these valuation methods. In addition, we have identified five key criteria against which, we believe, investors should assess junior companies in this sector.

1. Investors should look out for companies already **in production** or those about to go into production. Producing companies should be cash generative and profitable, provided costs are under control. In addition, producers may be in a position to start paying dividends to shareholders. Companies in production are also less likely to need to raise additional equity finance, minimising the risk of dilution for existing shareholders. Of the companies profiled, Eastern Platinum is producing from its Crocodile River Mine, while Sylvania Resources produces platinum from its tailings retreatment operations. Platinum Australia, Platmin and Ridge Mining are all about to go into production, expected early 2009.
2. Once in production, depth of resource is a key driver of costs, and therefore profitability. With increasing depth, producers face a rising geothermal gradient as well as higher capital and operating costs. Therefore, the shallower the resources, the better. Most of the companies profiled have relatively **shallow resources**, although we draw attention to Platmin and Sylvania Resources, which have entirely surface-based operations.
3. Location on the Bushveld Complex is also important. While most platinum mining has historically taken place on the **western limb**, the eastern limb is the focus of new development. However, approximately 80% of the eastern limb's platinum reserves are hosted within the UG2 (compared to only 54% on the western limb), which has a lower average platinum grade than the Merensky Reef. Furthermore, the chrome content of eastern limb ores is higher, making conventional smelting more challenging. The western limb also has better established infrastructure. Mining on the western limb is therefore preferable to the eastern limb. Both Eastern Platinum and Platmin have mines on the

western limb, while Wesizwe Platinum and Platinum Group Metals are planning the development of new mines there.

4. **Access to infrastructure** is important for any mining operation. However, concern regarding the availability of power and water continue to plague South Africa's platinum miners. Self-sufficient operations are more likely to be able to mitigate this impact. All of the companies we profile have taken steps to take advantage of existing infrastructure while also planning for contingencies.
5. **Vertical integration** is vital to a mining company's ability to grow and create value. Although relatively more difficult to establish as a junior in the platinum sector, a portfolio of exploration, development and production assets including access to nearby smelting facilities is key. Eastern Platinum is the most vertically integrated of the 10 companies we profile.

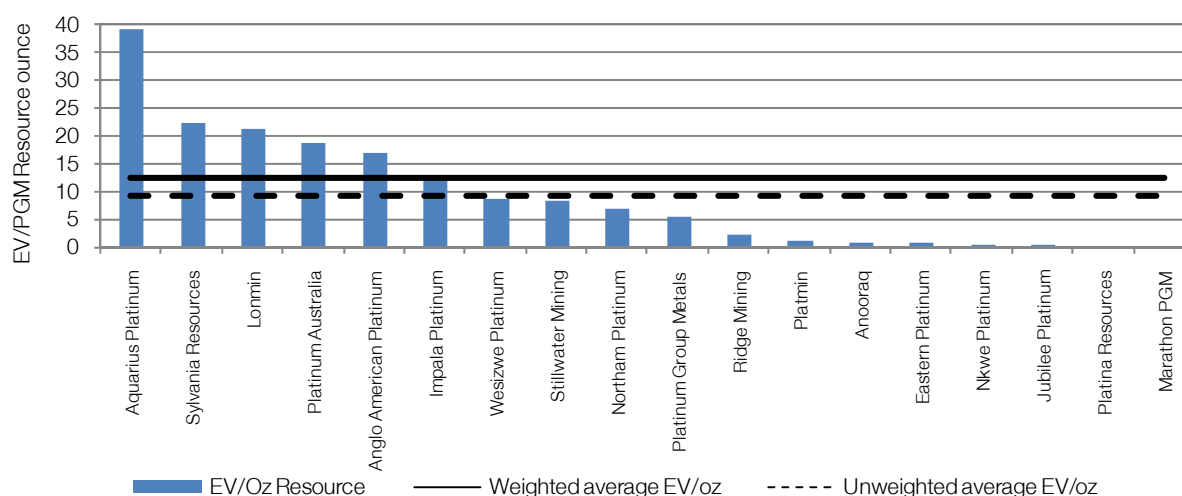
**Exhibit 25: Summary of investment criteria**

	In production	Shallow resource	Western limb	Access to infrastructure	Vertical integration
Braemore Resources	✓			✓	
Eastern Platinum	✓	✓	✓	✓	✓
Jubilee Platinum				✓	
Nkwe Platinum		✓		✓	
Platinum Australia	✓	✓		✓	✓
Platinum Group Metals		✓	✓	✓	
Platmin		✓	✓	✓	✓
Ridge Mining	✓	✓		✓	✓
Sylvania Resources	✓	✓	✓	✓	
Wesizwe Platinum		✓	✓	✓	

Source: Edison Investment Research

Exhibits 26 and 27 present our peer comparison for those companies with stated PGM resources. The weighted average EV/attributable resource ounce for the sector is US\$12/oz, compared to an unweighted average of US\$9/oz. On a resources base only, this suggests companies with EV/attributable resources values of less than US\$12/oz trade at a discount relative to their peers.

**Exhibit 26: EV/attributable resource ounce**



Source: Edison Investment Research, company reports, Bloomberg

Of the companies we profile, Wesizwe Platinum, Platmin, Platinum Group Metals, Ridge Mining, Eastern Platinum, Nkwe Platinum and Jubilee Platinum trade at less than US\$12/oz and at a discount to the sector.

#### Exhibit 27: Peer comparison for the platinum sector

Note: As at 11 November 2008

\* Companies profiled in this report, excludes Braemore Resources

Company	Listing	Market cap (US\$m)	EV (US\$m)	Attributable resources (3PGM+Au)	EV/oz
Aquarius Platinum	ASX	768.6	843.1	21.40	39.40
Platinum Australia*	AIM, ASX	103.6	94.5	5.03	18.76
Lonmin	FTSE	2,629.4	3,547.4	165.62	21.42
Anglo Platinum	JSE	9,959.2	10,766.4	641.35	16.79
Sylvania Resources*	AIM, ASX	103.9	64.2	2.86	22.42
Impala Platinum	US, JSE	6,948.8	6,053.8	486.86	12.43
Wesizwe Platinum*	JSE	137.4	114.4	12.94	8.84
Platmin*	AIM, TSX	84.2	24.5	20.93	1.17
Stillwater Mining	US	364.2	472.6	57.22	8.26
Northam Platinum	JSE	1,130.5	938.7	133.55	7.03
Platinum Group Metals*	TSX, AMEX	53.8	46.5	8.86	5.25
Ridge Mining*	AIM	49.2	41.4	18.31	2.26
Eastern Platinum*	AIM, TSX, JSE	205.2	68.3	91.91	0.74
Nkwe Platinum*	ASX	16.3	8.9	32.37	0.28
Anooraq	ASX	77.8	86.2	100.48	0.86
Jubilee Platinum*	AIM, JSE	24.5	9.8	40.95	0.24
Platina Resources	ASX	10.6	7.0	44.01	0.16
Marathon PGM	TSX	8.4	-14.7	3.43	-4.30
<b>Total/average</b>		<b>22,675.4</b>	<b>23,172.9</b>	<b>1,888.1</b>	<b>12.3</b>
<b>Unweighted average</b>					<b>9.0</b>

Source: Edison Investment Research, company reports, Bloomberg

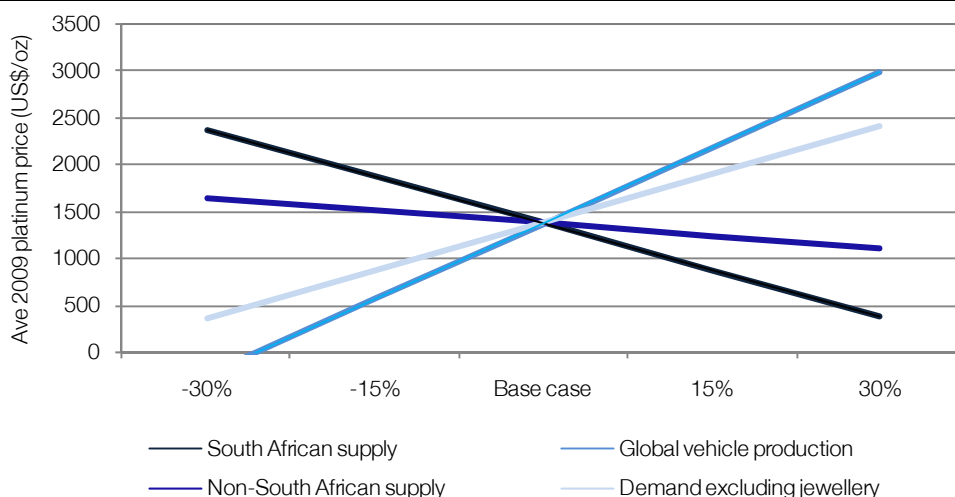
## 8. Sensitivities

The platinum price is the most significant value determinant for companies in this sector. The price is a function of demand (largely from vehicle autocatalysts) and supply (where South Africa is the dominant producer). Within our model, our base case scenario suggests a platinum price for 2009 of US\$1,350/oz. However, if we assume a 10% reduction from our base case in terms of vehicle production and South African supply, we would expect an average price of US\$1,170/oz in 2009. Even in this scenario, there is potential upside to the current price. When investing in this sector, investors should also take heed of companies' operating and capital costs as well as the potential impact of exchange rate fluctuations.

### Platinum price: Vehicle production and South African supply are key

On the demand side, vehicle production and autocatalyst demand have the greatest impact on our price forecasts. Changes to vehicle production and the efficacy of platinum substitution are therefore key drivers of demand. In terms of supply, South Africa is the largest producer of platinum, so any issues there (such as power outages, safety incidents and production delays) will impact the metal's price.

**Exhibit 28: Platinum price sensitivity analysis**



Source: Edison Investment Research

### ETF impact

Changes in ETF holdings of physical platinum will continue to influence the price. Given the highly illiquid nature of the market, small variations in ETF holdings tend to have a large impact on the platinum price. After heavy selling in the third quarter of 2008, ETFs have started to increase their platinum stocks again (albeit at a slower rate), which should provide upside to the current price.

### Operating and capital costs

Along with the rest of the mining industry, the platinum sector is in a period of escalating costs, driven by higher capital expenditure as well as higher input costs such as energy, labour and mining consumables. The period of ramping up to full production is also the most expensive. Operating costs are highest at these lower production levels, while capital expenditure is also at its

peak. As companies move into steady state production, we would expect a reduction in operating costs. The increased depth of mining and the lower platinum grades facing today's miners are also contributing to rising operating costs. While these are not entirely unavoidable, companies with shallower (eg Sylvania Resources or Platinum Australia) or higher-grade deposits are shielded to some degree from cost pressures. Furthermore, as most of the input costs, as well as some debt, are incurred in South African rand, platinum producers will benefit from any depreciation of the local currency relative to the US dollar.

## **Rand vs US dollar**

As discussed above, the majority of companies' fixed and variable costs as well as some of their debt is incurred in South African rand, which has fallen against the US dollar from ZAR7.80 at the end of June 2008 to ZAR10.70 at the beginning of November 2008. This has provided some respite to falling platinum prices, although it has been offset partly by higher fuel costs. As emerging markets feel the knock-on effects of a global slowdown, we expect the rand to remain vulnerable in 2009, although any weakening in the US dollar will support the platinum price.

## **Power and Eskom**

While the reserve margin between electricity supply and demand remains precarious, Eskom is focusing on bringing several new projects online over the next 10 years. Since 2005, over 2,500MW has already been commissioned. In 2009, expansion of new open cycle gas turbines will generate a further 1,000MW, while a further 3,800MW will be produced from three previously mothballed coal-fired power stations. In addition, supply to the Bushveld will be strengthened with a new 400kV transmission line and three new substations. Nevertheless, companies with alternative sources of power will be in a better position to mitigate potential shortages. All of the companies we profile have some form of contingency plan in place to deal with potential power outages.



## Company profiles

# Braemore Resources

## Investment summary: Unique technology

Braemore Resources is unique within the PGM sector. In South Africa, it plans to become a vertically integrated PGM producer and is currently focused on developing and commercialising the ConRoast technology licensed from Mintek for 10 years. In Australia, it has developed processes to retreat sulphide nickel tailings. The company trades at a discount to its book value of roughly £45m.

## Unlocking the value of high-chrome PGM ores

Braemore's 100% owned South African subsidiary is smelting high-chrome PGM ores at Mintek's Johannesburg facility. With initial production rates of c 20koz/year (3PGM+Au), the company aims to increase annual production to c 70koz following a recent upgrade from 1MW to 3.2MW. Once the scalability of this technology has been proven, Braemore plans to commission a 10MW PGM ConRoast smelter on the western limb by January 2011 and, following this, a 360ktpa base metal refinery. A positive feasibility for the 10MW smelter was completed in October 2008.

## The chrome conundrum

As the Merensky Reef is depleted and the eastern limb continues to be developed, a greater proportion of PGMs are being mined from the UG2, which has a higher chrome content. The high-temperature ConRoast process has been developed to process these chrome-rich ores, which traditional smelting methods struggle to treat.

## Sensitivities: Metallurgy is key

While initial results are encouraging, Braemore's ability to scale up the test smelter and secure its own source of ore feedstock remain important to the company's success, as does the viability of Ni recovery from the sulphide tailings. Provided the company is able to secure off-take agreements for the 10MW smelter, it should be in a good position to access the necessary development funding.

## Valuation: Trading at a discount to NAV

Following placement of 100m shares at 6.5p in July 2008, Braemore raised £6.5m and is currently trading at a discount to our estimated book value of approximately 6p per share. Debt free and generating revenue, Braemore has sufficient cash to complete a feasibility study of the Leinster mine tailings and continue with the planning stages of the 10MW smelter. It also has the support of its largest shareholder, Atomaer Technologies, which has a 40% stake.

## Consensus estimates

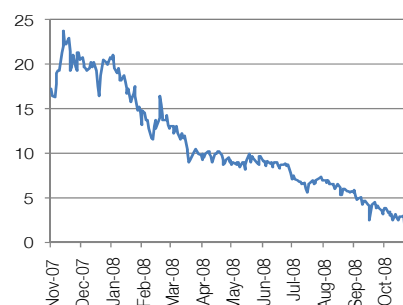
Year End	Revenue (£m)	PBT* (£m)	EPS* (p)	DPS (p)	P/E (x)	Yield (%)
06/07	0.0	(0.9)	(0.2)	0.0	N/A	N/A
06/08	9.0	(1.4)	(0.2)	0.0	N/A	N/A
06/09e	6.3	0.7	0.0	0.0	N/A	N/A
06/10e	15.3	0.2	0.0	0.0	N/A	N/A

Note: \*PBT and EPS are normalised, excluding goodwill amortisation and exceptional items

**Price** 2.75p\*  
**Market Cap** £22m

\* priced as at 31 October 2008

### Share price graph



### Share details

**Code** BRR, BRE  
**Listing** AIM, JSE  
**Shares in issue** 789.3m

### Price

**52 week** High Low  
 23.8p 1.0p

### Balance Sheet as at 30 June 2008

**Debt/Equity (%)** N/A  
**NAV per share (p)** 6.1  
**Net cash (£m)** 1.0

### Business

Braemore Resources is developing unique, environmentally friendly smelting technology for high-chrome PGM ores. Having secured off-take agreements with Anglo Platinum and Northam Platinum, production from a trial smelter in South Africa is increasing from 20koz/year to 70koz/year. In Australia, a definitive feasibility study is underway for the retreatment of sulphide nickel tailings at BHP Billiton's Leinster nickel mine.

### Bull


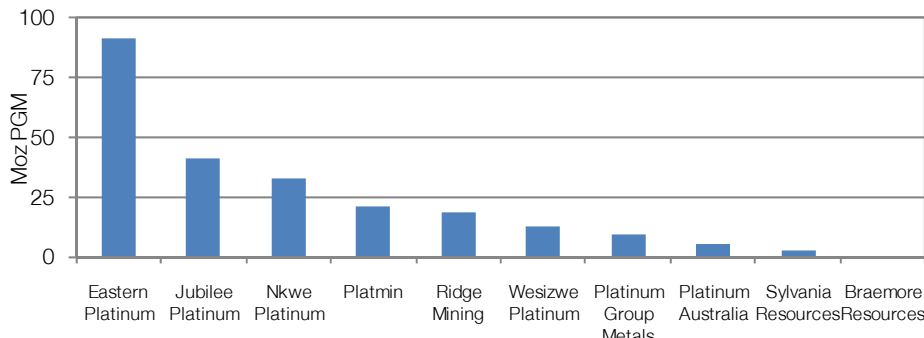
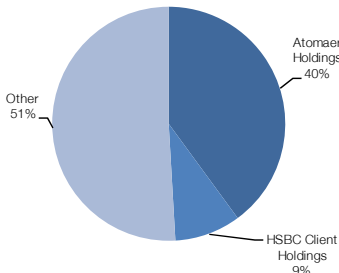
- Ability to treat high-chrome, PGM ores
- Generating cash from smelting revenue

### Bear

- No upstream mine production
- Scalability of smelting technology

### Analysts

**Charles Gibson** 020 3077 5724  
 cgibson@edisoninvestmentresearch.co.uk  
**Michael Starke** 020 3077 5725  
 mstarke@edisoninvestmentresearch.co.uk

Key criteria		
Investment criteria	Summary	Comment
In production	✓	20-70koz/year from trial 3.2MW smelter at Mintek facility
Shallow resource	N/A	Currently no mineral resources
Western Bushveld	N/A	Proposed 10MW smelter to be located in Rustenburg
Access to infrastructure	✓	Exclusive rights to ConRoast, unique PGM smelting technology
Vertical integration	X	Smelting only, currently no exploration or mine production
Location of projects		Future catalysts
		<ul style="list-style-type: none"><li>• Completion of definitive feasibility study review for 10MW smelter</li><li>• Increase 3.2MW smelter production to 70koz/year</li><li>• Appointment of BEE partner</li><li>• Completion of definitive feasibility study at Leinster nickel tailings</li><li>• Acquisition/development of upstream PGM mine production</li></ul>
Attributable mineral resource		Non-Executive Chairman
		<p>Dr Matthews Phosa is an attorney by profession and sits on the boards of a number of South African companies. He served as premier of Mpumalanga from 1994 to 1999 and continues to play an active role in politics. Phosa is facilitating the BEE partnership currently under negotiation.</p>
Attributable EV/resource		Managing Director
N/A		<p>Leon Coetzer is a qualified chemical engineer with over 16 years' experience with Anglo Platinum, where he managed both the technical and production aspects of large concentrators and smelters. Coetzer is spearheading the company's growth strategy.</p>
Forecast attributable production		Major shareholders
N/A		

# Eastern Platinum

## Investment summary: Profitable return

Eastern Platinum's flagship Crocodile River Mine (CRM) is returning to profitability through improved management and mining methods. The company expects to be producing at 125koz/year by year end. With a portfolio of assets, Eastplats is the most vertically integrated junior in the sector and aims to produce 140koz in 2009.

### Crocodile River Mine production increases

The CRM was initially developed by Barplats in 1987 and subsequently operated by various companies, including time under care and maintenance. Historically, mining has been hampered by geological faulting and inappropriate mining methods. By adopting better methods, Eastern Platinum has successfully increased productivity and reduced costs. CRM currently operates at approximately 110ktpm, with potential to increase to 220ktpm. The capacity of the existing concentrator is being upgraded to 180ktpm, but will need to be further expanded with increased production rates. There is also the option to restart the mothballed 7.4MW smelter on-site, which could be upgraded to 20MW at an approximate cost of US\$100m.

### Eastern Limb exploration and development: On hold

On the eastern limb, the company is developing the contiguous Spitzkop and Kennedy's Vale (SKV) projects as well as exploring the Mareesburg project. The SKV project has a resource of 32.4Moz (3PGM+Au) in the Merensky Reef and 39.9Moz in the UG2. At Mareesburg, Eastplats has resources of 1.7Moz in the UG2. The company has recently rescheduled development timing due to low PGM prices.

### Sensitivities: Crocodile River Mine geology, delays

Conventional mining has been reintroduced to mitigate the impact of faulting at CRM. Nevertheless, delays to regulatory approvals for New Order Mining Rights could impact the timing of increased production.

### Valuation: Cash rich and growing

From a peak of 204p in March this year, the share price has tumbled to levels of around 20p, largely due to the company's operational gearing. With a profitable mine, one of the lowest EV/resource valuations in the sector and a P/E of 6, Eastern Platinum trades at a steep discount to its peers, especially considering its cash, cash equivalents and short-term investments of US\$0.29/share at 30 June 2008.

### Consensus estimates

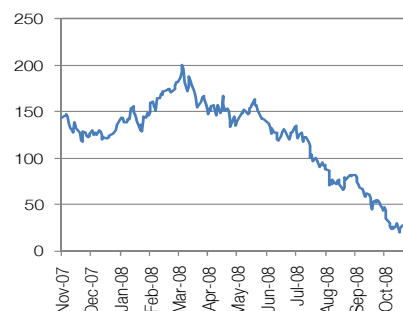
Year End	Revenue (US\$m)	PBT* (US\$m)	EPS* (c)	DPS (c)	P/E (x)	Yield (%)
06/06	12.1	(4.2)	(3.0)	0.0	N/A	N/A
06/07	101.2	(9.2)	(2.0)	0.0	N/A	N/A
12/08e	175.0	56.3	5.0	0.0	6.3	N/A
12/09e	195.0	55.6	5.0	0.0	6.3	N/A

Note: \*PBT and EPS are normalised, excluding goodwill amortisation and exceptional items. £1= US\$1.6

**Price** 19.8p\*  
**Market Cap** £134m

\*priced as at 31 October 2008

#### Share price graph



#### Share details

**Code** ELR, EPS  
**Listing** AIM, TSX, JSE  
**Shares in issue** 680.5m

**Price**  
 52 week High 203.8p Low 19.5p

#### Balance Sheet as at 30 June 2008

**Debt/Equity (%)** N/A  
**NAV per share (US\$)** 1.22  
**Net cash (US\$m)** 90.7

#### Business

Eastern Platinum owns 85% of the Crocodile River Mine, which it operates on the western limb. On the eastern limb, it is exploring and developing the Kennedy's Vale (85%), Spitzkop (93%) and Mareesburg (75%) projects.

#### Bull


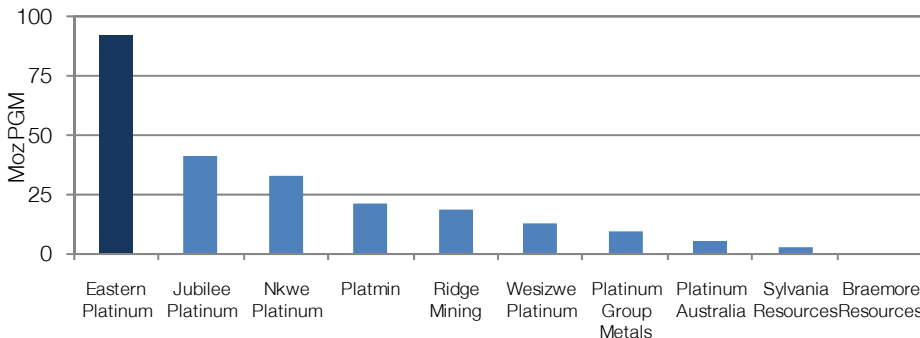
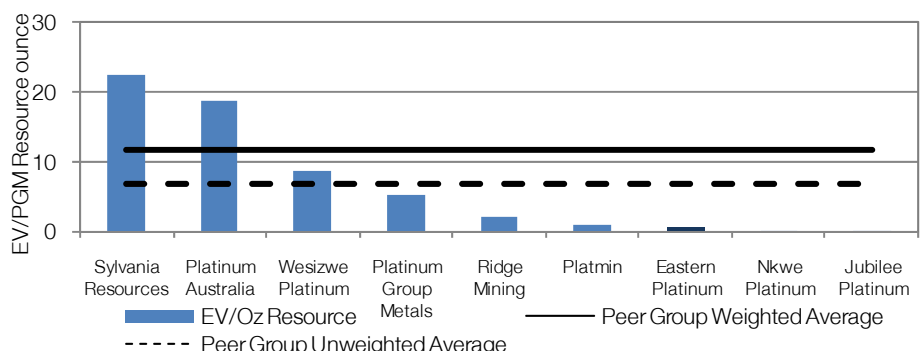
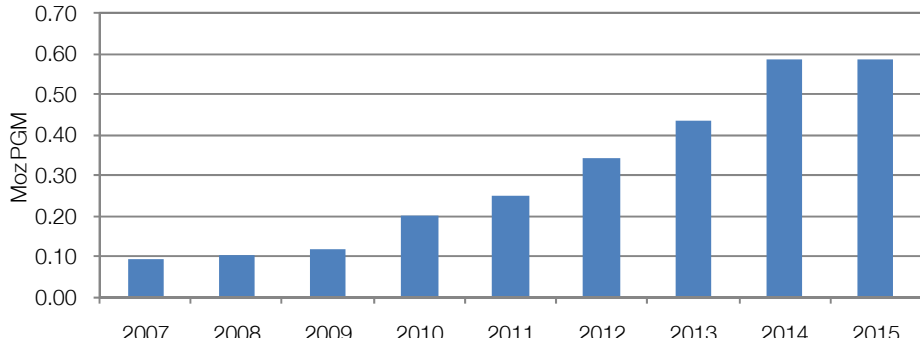
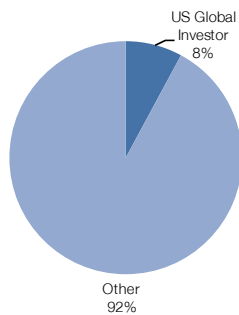
- Generating revenue, first profits expected FY08
- Vertically integrated, unique among juniors

#### Bear

- Rescheduling of eastern limb development due to low PGM prices
- Regulatory delays to New Order Mining Rights

#### Analysts

**Charles Gibson** 020 3077 5724  
 cgibson@edisoninvestmentresearch.co.uk  
**Michael Starke** 020 3077 5725  
 mstarke@edisoninvestmentresearch.co.uk

Key criteria		
Investment criteria	Summary	Comment
In production	✓	Currently producing 120koz/year at the Crocodile River Mine
Shallow resource	✓	UG2 at Crocodile River Mine from surface to over 900m depth
Western Bushveld	✓	Crocodile River Mine located on western limb, 5km south of Brits
Access to infrastructure	✓	CRM located in established mining district with access to grid allocation of 23MW, water allocation for 220koz/year at Spitzkop/Kennedy's Vale
Vertical integration	✓	Ongoing exploration, in production, operating concentrator, mothballed smelter facilities and an off-take agreement with Impala Platinum
Location of projects		Future catalysts
		<ul style="list-style-type: none"><li>• Production from Crocette sections at CRM</li><li>• Issuance of remaining New Order Mining Rights for CRM</li><li>• Decision to upgrade CRM smelter</li><li>• Issue of Maresburg Mining Permit</li></ul>
Attributable mineral resource		Chairman
		Mr David Cohen has over 20 years' experience in the mining industry. Formerly with Fluor Engineers, and Northern Orion Resources, where he was past president and CEO and largely responsible for the dramatic turn-around in the company's fortune. As a result, Cohen is well-known in the North American and European capital markets.
Attributable EV/resource		President and CEO
		Mr Ian Rozier is a professional geologist with over 25 years' experience in the mining industry. Formerly with Goldfields of South Africa and a partner of Golder Associates, he has worked with several major mining companies. Rozier has been involved in many capital raisings in Canada and Europe.
Forecast attributable mine production		Major shareholders
		

# Jubilee Platinum

## Investment summary: Targeting Tjate

Jubilee Platinum has a 63% interest in its flagship Tjate project on the eastern limb where it is completing a feasibility study for the development of a 200ktpm underground mine producing 225koz pa for 20 years.

### Tjate feasibility study nears completion

Tjate consists of three contiguous farms and is located down dip of Anglo Platinum's Twickenham mine and Impala Platinum's Marula mine. Jubilee Platinum has drilled over 38,000m, while a further 16,000m is planned for the remainder of the year. On the back of a positive scoping study conducted by Snowden, the company raised £11.2m in November 2007 to fund a feasibility study on the shallowest of the three farms (Dsate). The feasibility study commenced in January and is expected to be finalised before the end of the year. As part of this study, we expect Jubilee to release details of a JORC-compliant resource estimate. To date, the company expects to delineate attributable resources of around 282Mt at an average grade of 7.2g/t containing 41Moz (3PGM+Au). A JORC-compliant resource statement is expected within the coming months.

### Madagascar: Exploration ongoing

The company has five projects in Madagascar where it has identified PGM, nickel and copper mineralisation, albeit at lower grades to Tjate. As part of its ongoing greenfield exploration programme, Jubilee is using soil geochemistry, airborne geophysics and diamond drilling to delineate potential targets on the island.

### Sensitivities: Tjate feasibility outcome

The key issue facing Jubilee is the outcome of the feasibility study currently in progress. With depressed PGM prices and recalcitrant capital markets, motivation for the development of a mine of this nature on the eastern limb needs to be robust. It seems more likely Jubilee will eventually strike a deal with one its neighbours.

### Valuation: Enough cash to complete Tjate feasibility study

With an EV of c £7.0m and a resource of 41Moz, Jubilee's EV/resource multiple is below most its peers. However, there is upside in the form of a positive outcome to the feasibility study, JORC confirmation of the resource or a takeover offer. Jubilee's healthy cash balance should see it through until the end of next year.

## Consensus estimates

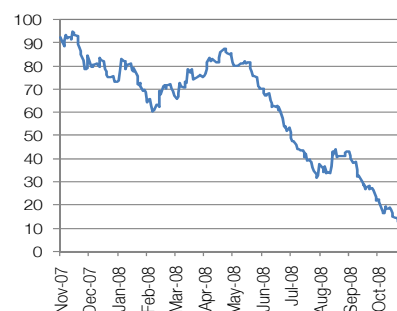
Year End	Revenue (£m)	PBT* (£m)	EPS* (p)	DPS (p)	P/E (x)	Yield (%)
06/07	0.0	(1.8)	(2.1)	0.0	N/A	N/A
06/08	0.0	(4.1)	(3.5)	0.0	N/A	N/A
06/09e	0.0	(4.4)	(1.7)	0.0	N/A	N/A
06/10e	0.0	(1.8)	(5.2)	0.0	N/A	N/A

Note: \*PBT and EPS are normalised, excluding goodwill amortisation and exceptional items.

**Price** 14.3p\*  
**Market Cap** £15m

\*priced as at 31 October 2008

#### Share price graph



#### Share details

**Code** JLP  
**Listing** AIM, JSE  
**Shares in issue** 105.0m

#### Price

**52 week** High Low  
 94.8p 11.5p

#### Balance Sheet as at 30 June 2008

**Debt/Equity (%)** N/A  
**NAV per share (p)** 29.8  
**Net cash (£m)** 9.2

#### Business

Jubilee Platinum has a 63% interest in the eastern limb Tjate project where it is completing a feasibility study. The company also has PGM exploration interests in Madagascar and Sierra Leone.

#### Bull

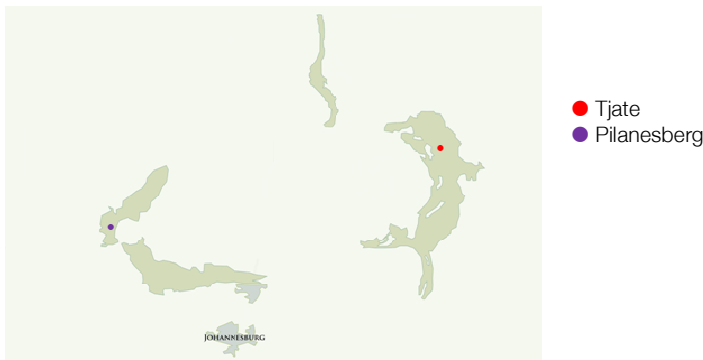
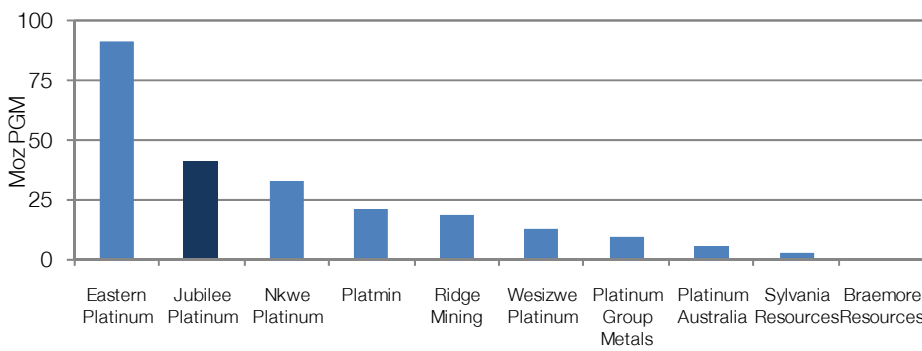
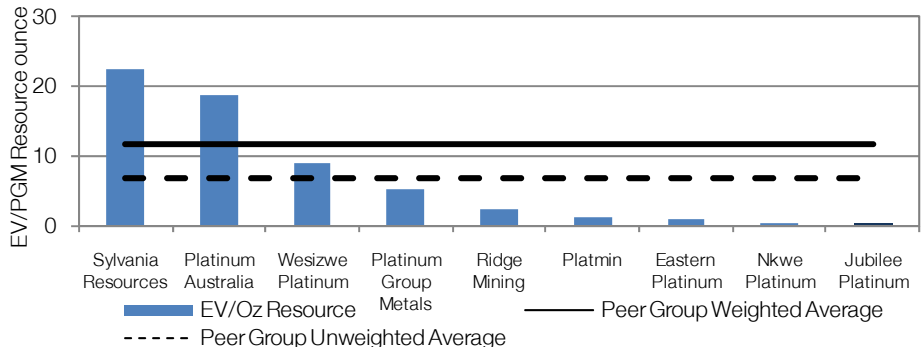
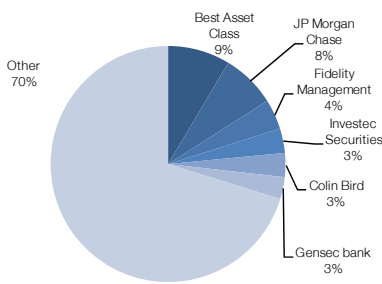
- Rerating with publication of feasibility study
- Potential for significant JORC resources
- Potential JV partner or takeover target

#### Bear

- Execution and development risk for new mine

#### Analysts

**Charles Gibson** 020 3077 5724  
 cgibson@edisoninvestmentresearch.co.uk  
**Anthony Wagg** 020 3077 5700  
 awagg@edisoninvestmentresearch.co.uk

Key criteria		
Investment criteria	Summary	Comment
In production	X	No production
Shallow resource	X	Merensky Reef 800m to 1,300m
Western Bushveld	X	Located on the eastern limb
Access to infrastructure	✓	Contiguous to Impala Platinum's Marula mine (Clapham and Driekop declines) and Anglo Platinum's Twickenham mine (Hackney Shaft)
Vertical integration	X	Exploration only
Location of projects		Future catalysts
		<ul style="list-style-type: none"><li>• Completion of feasibility study at the Tjate project</li><li>• Publication of JORC compliant resource at Tjate</li><li>• Potential joint venture or outright sale of Tjate project or Jubilee Platinum plc</li><li>• Scoping study for Madagascan projects</li></ul>
Attributable mineral resource		Non-Executive Chairman
		Mr Malcolm Burne was originally a stockbroker and a financial journalist with the <i>Financial Times</i> . He has managed and controlled fund management, venture capital and investment banking companies in Australia, Hong Kong and North America. He has been director of over 20 companies most of them within the mining sector.
Attributable EV/resource		Chief Executive Officer
		Mr Colin Bird has over 40 years of experience in the mining industry, including mine manager at Selebi Phikwe Nickel Copper Mine. In 1978, he joined Costain Mining and was later managing director of Plateau Mining. He subsequently joined Petroman Saudi Arabia to manage their mining activities.
Forecast attributable mine production		Major shareholders
N/A		



# Nkwe Platinum

## Investment summary: Unlocking value

Nkwe Platinum has amassed a significant mineral holding on the eastern limb of South Africa's Bushveld Complex, down-dip of Anglo Platinum's Modikwa Mine. Nkwe's properties include Garatau (74%) and Tubatse (optioned stake of 74%), which together make up the Garatau-Tubatse project with JORC resources of 18.0Moz and 20.4Moz, respectively (3PGM+Au). Nkwe has signed an option agreement with Xstrata, which can acquire 50% of the project upon completion of the feasibility study currently underway. Nkwe is trading around its net cash position and at a discount to its peers on the basis of its EV/resource ounce.

### Garatau-Tubatse: Feasibility study underway

Nkwe's flagship Garatau-Tubatse project has a total resource of 38.4Moz, which is hosted within the Merenksy and UG2 reefs from depths of 350m and 700m, respectively. Pending the outcome of the feasibility study and with Xstrata funding, Nkwe plans to develop two underground mines with the potential for annual production of 1Moz (3PGM+Au) and mine lives of 50 years. On this basis and assuming a basket price of US\$1,200/oz, operating costs of US\$550/oz and capex of US\$1.5bn, the project potentially generates an NPV of US\$5.3bn.

### Xstrata option: Nkwe's free-carry to production

Xstrata's bid for Lonmin earlier this year signalled its intention to expand the company's platinum business. Although the bid was withdrawn, Xstrata's US\$10m option to acquire 50% of the Garatau-Tubatse project provides an entry into a sector dominated by a handful of majors. For Nkwe shareholders, the path to platinum production could well be funded by Xstrata.

### Sensitivities: PGM prices

For Garatau-Tubatse, a  $\pm 10\%$  variation in a long-term, base-case basket price of US\$1,200/oz (3PGM+Au) results in a  $\pm$ US\$1.3bn variation in the potential project NPV from a base case of US\$5.3bn.

### Valuation: Debt free and fully funded to end 2009

From a high of A\$1.12 in February 2008, Nkwe's share price has fallen to lows of 10c and is currently trading below its NAV/share of 48c and close to cash (14Ac/share). Debt free with US\$16.4m net cash, Nkwe is well-funded to complete the Garatau-Tubatse feasibility study by the end of 2009.

### Edison estimates

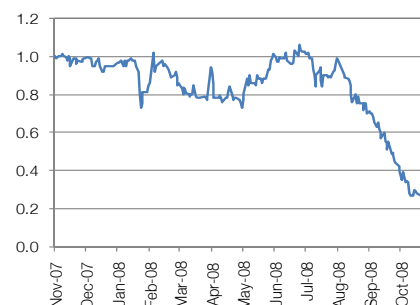
Year End	Revenue (A\$m)	PBT* (A\$m)	EPS* (¢)	DPS (¢)	P/E (x)	Yield (%)
06/07	0.2	(3.5)	(4.0)	0.0	N/A	N/A
06/08	2.0	(5.6)	(3.1)	0.0	N/A	N/A
06/09e	1.1	(4.3)	(1.3)	0.0	N/A	N/A
06/10e	0.0	(6.8)	(1.4)	0.0	N/A	N/A

Note: \*PBT and EPS are normalised, excluding goodwill amortisation and exceptional items

**Price** 16c\*  
**Market Cap** A\$30m

\*priced as at 31 October 2008

#### Share price graph



#### Share details

Code NKP  
 Listing ASX  
 Shares in issue 187.8m

#### Price

52 week High Low  
 112c 10c

#### Balance Sheet as at 30 June 2008

Debt/Equity (%) N/A  
 NAV per share (c) 47.6  
 Net cash (A\$m) 7.7

#### Business

Nkwe Platinum's flagship Garatau-Tubatse project is located on the eastern limb and has a total resource of 38.4Moz. Xstrata has paid US\$10m for the option to acquire 50% of this project. Nkwe's other non-core projects are being farmed out or sold. Nkwe is listed on the ASX, with plans to list on AIM and the JSE.

#### Bull

- Xstrata support for Garatau-Tubatse
- Significant PGM resource base


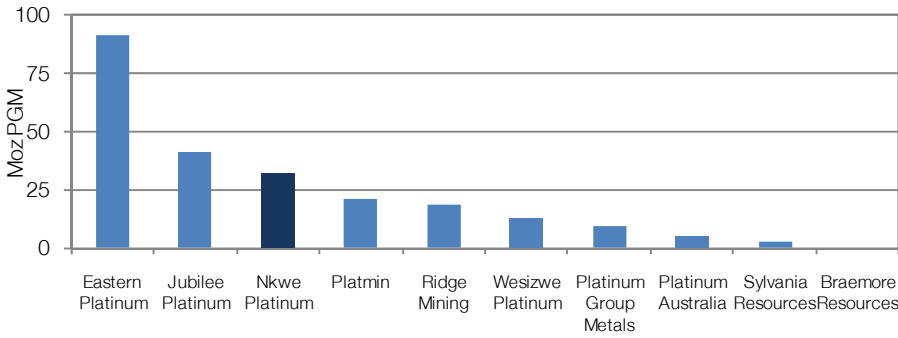
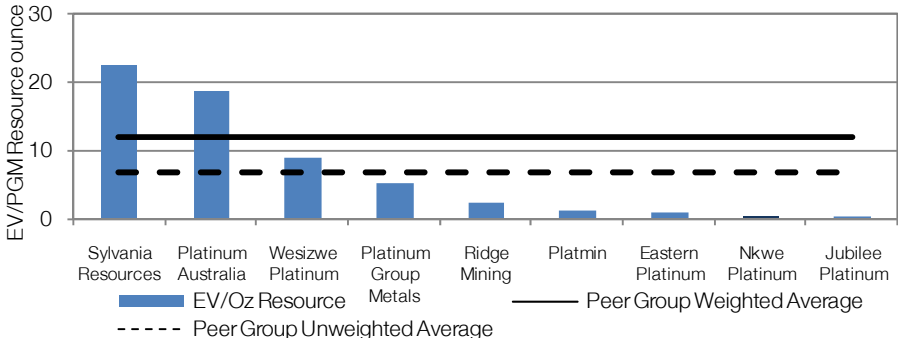
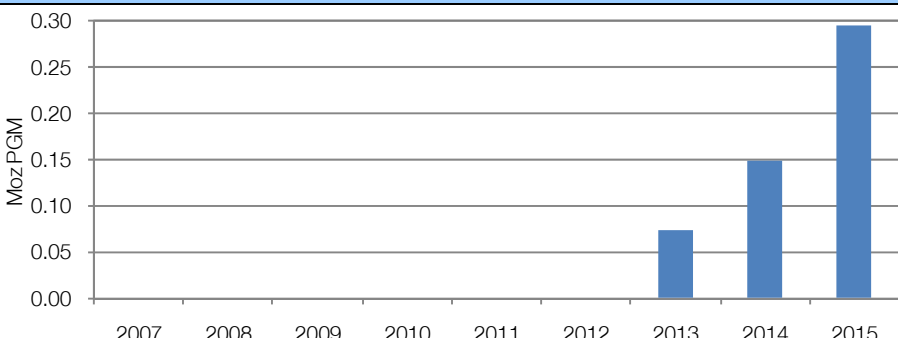
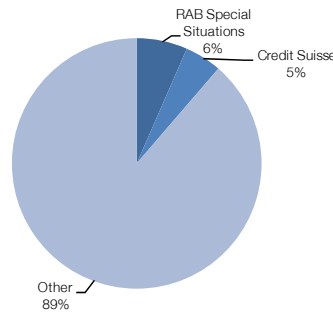
#### Bear

- Time to production at Garatau-Tubatse
- 538.8m fully diluted shares

#### Analysts

Charles Gibson 020 3077 5724  
 cgibson@edisoninvestmentresearch.co.uk  
 Michael Starke 020 3077 5725  
 mstarke@edisoninvestmentresearch.co.uk



Key criteria																														
Investment criteria	Summary	Comment																												
In production	X	First potential production expected around 2013																												
Shallow resource	✓	At Garatau-Tubtase, Merensky Reef occurs from a depth of 350m																												
Western Bushveld	X	Flagship Garatau-Tubatse project on eastern limb																												
Access to infrastructure	✓	Located down dip of Anglo Platinum's Modikwa Mine and Impala Platinum's Marula Mine																												
Vertical integration	X	Exploration and development only																												
Location of projects		Future catalysts																												
 <div><div>● Garatau-Tubatse</div><div>● Ghost Mountain</div><div>● Tinderbox/Kliprivier</div></div>		<ul style="list-style-type: none"><li>• Acquisition of International Goldfields 15% stake in Tubatse</li><li>• Disposal, JV or earn-in at non-core projects</li><li>• Completion of feasibility study on Garatau-Tubatse</li><li>• Decision on Xstrata option</li><li>• Development of two mines at Garatau-Tubatse</li></ul>																												
Attributable mineral resource		Managing Director																												
 <table><caption>Attributable mineral resource (Moz PGM)</caption><thead><tr><th>Company</th><th>Moz PGM</th></tr></thead><tbody><tr><td>Eastern Platinum</td><td>~90</td></tr><tr><td>Jubilee Platinum</td><td>~40</td></tr><tr><td>Nkwe Platinum</td><td>~30</td></tr><tr><td>Platmin</td><td>~20</td></tr><tr><td>Ridge Mining</td><td>~18</td></tr><tr><td>Wesizwe Platinum</td><td>~15</td></tr><tr><td>Platinum Group Metals</td><td>~12</td></tr><tr><td>Platinum Australia</td><td>~8</td></tr><tr><td>Sylvania Resources</td><td>~5</td></tr><tr><td>Braemore Resources</td><td>~2</td></tr></tbody></table>		Company	Moz PGM	Eastern Platinum	~90	Jubilee Platinum	~40	Nkwe Platinum	~30	Platmin	~20	Ridge Mining	~18	Wesizwe Platinum	~15	Platinum Group Metals	~12	Platinum Australia	~8	Sylvania Resources	~5	Braemore Resources	~2	<p>Mr Maredi Mphahlele holds a BSc (Engineering) in Mineral Resource Management and a Diploma in Mine Surveying from the University of the Witwatersrand. He has considerable experience within the mining and project finance sectors. Mphahlele also sits on the boards of various South African engineering, trading and mining companies.</p>						
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Eastern Platinum	~1																													
Nkwe Platinum	~1																													
Jubilee Platinum	~1																													
Forecast attributable mine production		Major shareholders																												
 <table><caption>Forecast attributable mine production (Moz PGM)</caption><thead><tr><th>Year</th><th>Moz PGM</th></tr></thead><tbody><tr><td>2007</td><td>0.00</td></tr><tr><td>2008</td><td>0.00</td></tr><tr><td>2009</td><td>0.00</td></tr><tr><td>2010</td><td>0.00</td></tr><tr><td>2011</td><td>0.00</td></tr><tr><td>2012</td><td>0.00</td></tr><tr><td>2013</td><td>~0.07</td></tr><tr><td>2014</td><td>~0.15</td></tr><tr><td>2015</td><td>~0.28</td></tr></tbody></table>		Year	Moz PGM	2007	0.00	2008	0.00	2009	0.00	2010	0.00	2011	0.00	2012	0.00	2013	~0.07	2014	~0.15	2015	~0.28	 <table><caption>Major shareholders</caption><thead><tr><th>Shareholder</th><th>Percentage</th></tr></thead><tbody><tr><td>Other</td><td>89%</td></tr><tr><td>RAB Special Situations</td><td>6%</td></tr><tr><td>Credit Suisse</td><td>5%</td></tr></tbody></table>	Shareholder	Percentage	Other	89%	RAB Special Situations	6%	Credit Suisse	5%
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# Platinum Australia

## Investment summary: Low-cost production

Platinum Australia (PLA) is a low-cost, producer of PGM from its shallow Smokey Hills mine on the eastern limb. Smokey Hills is set to produce up to 95,000oz per annum by the end of 2009. PLA is also exploring the Kraaipan Greenstone Belt, where it has a JV with ARM Platinum and the right to earn up to 49% of the project. The company's successful transformation from explorer to producer should act as a catalyst for re-rating.

### Smokey Hills Mine: The main project in production

At the beginning of Q308, PLA started the process of commissioning the concentrator at its Smokey Hills Platinum Mine located on the eastern limb. Once fully commissioned, we expect first PGM concentrate to be produced later this year. In June 2007, PLA completed the acquisition of the Smokey Hills project in which it is moving to a direct interest of 69.75%. Above a basket price of US\$677/oz, PLA receives approximately 85% of the project revenue, comprising a 65% direct interest and a further indirect interest of approximately 20% for BEE debt repayment from cashflows. With a measured and indicated resources of 1Moz, the project has a mine life of around 10 years. Capex of US\$51m has been funded by debt (US\$40m) and equity (US\$11m), with an obligation to hedge a portion of production.

### Kalahari Platinum Project: Exploration ongoing

Located on the Kraaipan Greenstone Belt, 330km west of Johannesburg, the Kalahari project currently has a total mineral resource of 4.2Moz (2PGM+Au). To earn its 49% stake from ARM Platinum, PLA must complete a BFS, which we expect in Q109. Assuming a positive outcome, we expect first production in 2012.

### Sensitivities: Geological losses

At Smokey Hills, PLA has accounted for geological losses of 13%. In addition, the resource estimate conservatively assumes a further 8% loss for potential unidentified structural features. To mitigate Eskom shortages, PLA is also installing generators.

### Valuation: Re-rating with production

From its peak of 149p in June 2008, the share price has been dragged down by the subsequent sell-off in platinum and negative market sentiment. Even with one of the highest EV/resource multiples of its peers, we expect a re-rating as production commences and subsequently increases.

### Consensus estimates

Year End	Revenue (A\$m)	PBT* (A\$m)	EPS* (c)	DPS (c)	P/E (x)	Yield (%)
12/07	1.5	(7.1)	(4.7)	0.0	N/A	N/A
12/08	2.2	(12.0)	(5.3)	0.0	N/A	N/A
12/09e	64.2	35.6	9.6	0.0	7.2	N/A
12/10e	115.0	50.7	14.0	0.0	4.9	N/A

Note: \*PBT and EPS are normalised, excluding goodwill amortisation and exceptional items. £1=AU\$2.47

**Price** 28.0p\*

**Market Cap** £62m

\* priced as at 31 October 2008

#### Share price graph



#### Share details

Code PLAA, PLA  
 Listing AIM, ASX  
 Shares in issue 220.1m

#### Price

52 week High Low  
 148.5p 18.3p

#### Balance Sheet as at 30 June 2008

Debt/Equity (%) N/A  
 NAV per share (c) 30.4  
 Net cash (A\$m) 9.5

#### Business

Platinum Australia has commenced production at its Smokey Hills project on the eastern limb in which it is increasing to a 69.75% direct and approximately 85% beneficial interest. The company also has the option to earn 49% of the Kalahari Platinum Project where it is completing a BFS with JV partner ARM Platinum.

#### Bull


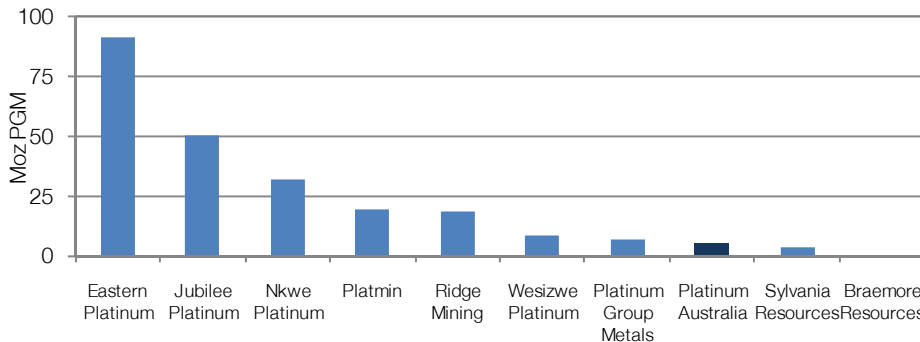
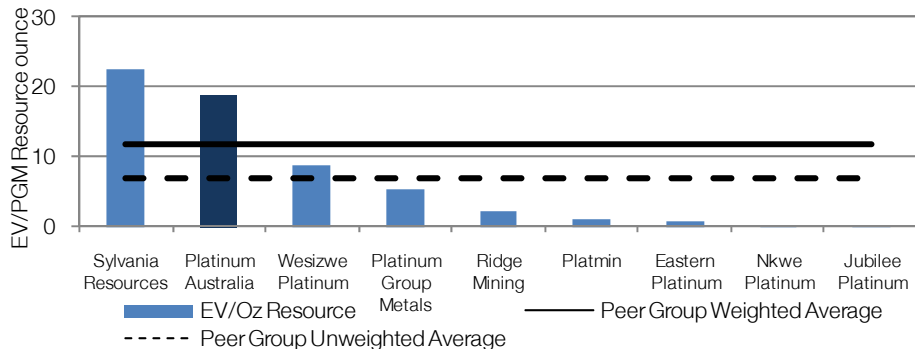
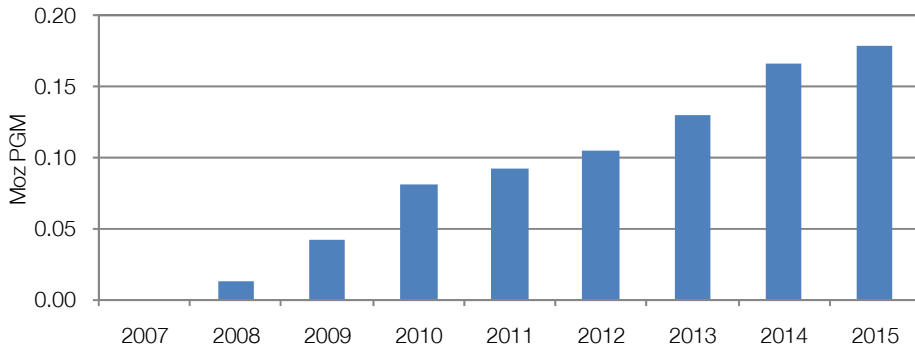
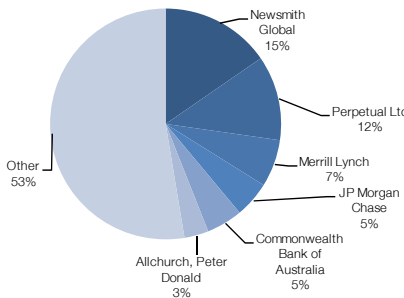
- Transformation from explorer to producer should ensure re-rating
- Shallow, low-cost mining (c US\$350/oz 3PGM+Au)

#### Bear

- Geological losses at Smokey Hills may exceed expected 21%

#### Analysts

Charles Gibson 020 3077 5724  
 cgibson@edisoninvestmentresearch.co.uk  
 Michael Starke 020 3077 5725  
 mstarke@edisoninvestmentresearch.co.uk

Key criteria		
Investment criteria	Summary	Comment
In production	✓	First concentrates from Smokey Hills in November 2008
Shallow resource	✓	Smokey Hills <150m; Kalahari Platinum <200m
Western Bushveld	X	Located on eastern limb and Kraaipan Greenstone Belt
Access to infrastructure	✓	8MVA standby generating capacity
Vertical integration	✓	Exploration, mining, concentration and smelter off-take agreed
Location of projects		Future catalysts
		<ul style="list-style-type: none"><li>• Completion of concentrator commissioning</li><li>• Production of first concentrate</li><li>• Underground mining</li><li>• Production rate of 95,000oz</li><li>• Completion of BFS at the Kalahari Platinum Project</li></ul>
Attributable mineral resource		Non-Executive Chairman
		Mr Peter Donald Allchurch is a geologist with more than 40 years' experience in mineral exploration, mining and petroleum exploration, development and production. Mr Allchurch has been an executive director of a number of listed Australian mining and oil and gas companies since 1980 and has considerable experience in corporate management.
Attributable EV/resource		Managing Director
		Mr John Derek Lewins is an engineer with more than 20 years' experience in senior mining management roles, including development of mining projects from a resource stage through feasibility studies to commissioning of mines and ultimately to sustained mining operations.
Forecast attributable mine production		Major shareholders
		

# Platinum Group Metals

## Investment summary: Restructuring for growth

Platinum Group Metals (PTM) has interests in three projects on the western limb. At the first of these, PTM has completed a feasibility study and plans to raise funds for the development of an underground mine, pending the restructuring of the WBJV. At its second project, PTM has established a JV to explore for PGMs on a south-eastern portion of the western limb. PTM is also exploring the northern limb.

### Developing Project 1 into a mine

Pending finalisation of the WBJV restructuring, PTM is increasing its stake in Projects 1 and 3 from 37% to 74%. As a result, PTM's total attributable resources from these projects increase from 2.2Moz to 7.7Moz, of which 3.2Moz are reserves. Following a positive outcome to the feasibility study published earlier this year, the company plans to develop Project 1 into a mine with a steady state production rate of approximately 250koz pa and a life of 22 years. As part of the restructuring, PTM's anticipated attributable production doubles from roughly 92koz pa (3PGM+Au) to 185koz pa. Once a decision to construct the mine has been taken, we would expect production after roughly three years. Expected operating costs are US\$438/oz, while the life of mine capex requirement is US\$684m.

### Funded exploration joint venture

Located on the south-eastern extent of the western limb, the PTM/Sable Platinum JV will explore 82.9km<sup>2</sup> of platiniferous mineral rights secured by PTM. By spending ZAR51m over five years, Sable Platinum will have the right to earn-in to 51% of the project, while a BEE partner will retain 26%, leaving PTM with 23%. The exploration programme will be managed by PTM and may be expanded by a further 27.7km<sup>2</sup>.

### Sensitivities

Assuming the conditions precedent are satisfied and the WBJV restructuring goes ahead, PTM will have to raise the capex needed to develop Project 1 into a mine.

As an underground mine, it will also incur higher operational expenditure.

### Valuation

From a high of 465c/share, the stock is trading somewhat above its 71c low. The company recently raised C\$7.4m, which should see it through until mid-2009. Assuming the mine is developed, the feasibility study presents a post-tax NPV<sub>10</sub> of US\$217m (321c/share) at US\$1,295/oz Pt, US\$334/oz Pd and US\$5,386 Rd.

### Consensus estimates

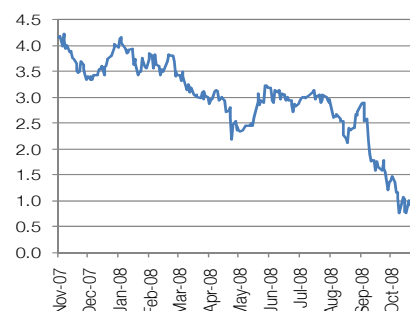
Year End	Revenue (C\$m)	PBT* (C\$m)	EPS* (¢)	DPS (¢)	P/E (x)	Yield (%)
08/06	0.0	(3.9)	(8.0)	0.0	N/A	N/A
08/07	0.0	(6.8)	(12.0)	0.0	N/A	N/A
08/08e	0.0	(3.3)	(9.8)	0.0	N/A	N/A
08/09e	0.0	(4.0)	(21.0)	0.0	N/A	N/A

Note: \*PBT and EPS are normalised, excluding goodwill amortisation and exceptional items.

**Price** 110c\*  
**Market Cap** C\$74m

\*priced as at 31 October 2008

#### Share price graph



#### Share details

**Code** PTM, PLG  
**Listing** TSX, AMEX  
**Shares in issue** 67.5m

#### Price

**52 week** High Low  
 419.0c 77.0c

#### Balance Sheet as at 31 May 2008

**Debt/Equity (%)** N/A  
**NAV per share (c)** 48.2  
**Net cash (C\$m)** 5.6

#### Business

Under the terms of a proposed restructuring of the Western Bushveld (WB) JV with Wesizwe and Anglo, Platinum Group Metals (PTM) is taking a 74% interest in Projects 1 and 3. In addition, the company has been granted minerals rights over 82.9km<sup>2</sup> on the western limb. The company's other exploration interests include War Springs and Tweespalk on the northern limb.

#### Bull


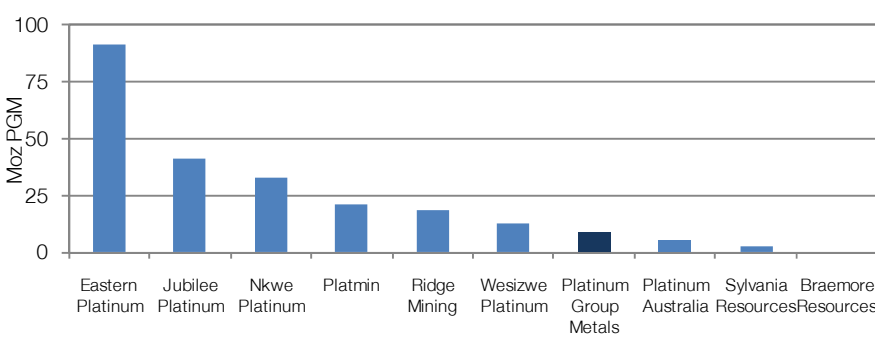
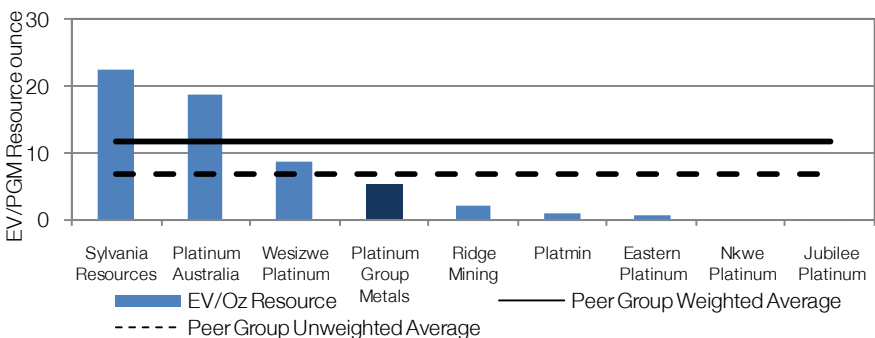
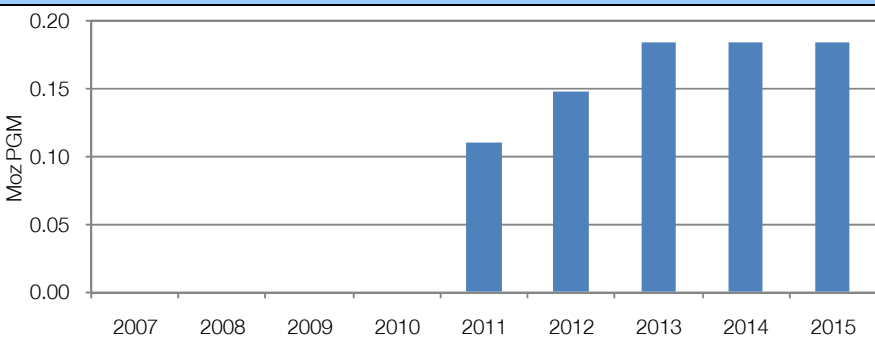
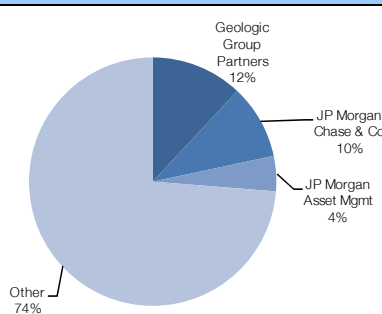
- Potential increase in attributable resources and reserves
- Potential for increased production

#### Bear

- Restructuring of WBJV to be finalised
- Need to raise capex for mine development at Project 1

#### Analysts

**Charles Gibson** 020 3077 5724  
 cgibson@edisoninvestmentresearch.co.uk  
**Michael Starke** 020 3077 5725  
 mstarke@edisoninvestmentresearch.co.uk

Key criteria		
Investment criteria	Summary	Comment
In production	X	First underground mine production expected 2011
Shallow resource	✓	MR and UG2 occur from 130m to 630m depth below surface
Western Bushveld	✓	Part of the Western Bushveld joint venture
Access to infrastructure	✓	2MW Eskom allocation for Project 1 construction
Vertical integration	X	Exploration, no production, while Anglo Platinum has right of first refusal to purchase all ore or concentrate from Project 1
Location of projects		Future catalysts
		<ul style="list-style-type: none"><li>• Finalisation of the WBJV restructuring</li><li>• Raising funds for the development of Project 1</li><li>• Completion of mine construction at Project 1</li><li>• Commissioning and first production from Project 1</li><li>• Exploration expenditure of ZAR51m over five years at PTM/Sable JV</li></ul>
Attributable mineral resource		President and CEO
		Mr Michael Jones has 20 years of experience as a professional geological engineer and has been involved with raising over US\$200m for exploration, mining development and production. He has held several senior positions in the sector and was responsible for the discovery of the Glimmer Gold mine in Ontario. Jones holds a BA Sc in geological engineering from the University of Toronto.
Attributable EV/resource (assumes WBJV restructuring completes)		Chief Financial Officer
		Mr Frank Hallam has extensive operating and financial experience at the senior management level with several publicly listed resource companies and has over 10 years of experience working in East and South Africa, including his role as CFO and director with Tan Range Exploration. He is a chartered accountant and has a degree in business administration from Simon Fraser University.
Forecast attributable mine production		Major shareholders
		

# Platmin

## Investment summary: Emerging producer

Platmin is making the transition from developer to producer with its low-cost, open-pit, Pilanesberg project on the western limb expected to produce first concentrate in Q109. The company also has three pre-production projects on the eastern limb.

### Low-cost open pit production scheduled for H109

Platmin's flagship Pilanesberg open pit mine is located on the western limb and was awarded a mining right in February 2008. Ore mining started in November 2008 to develop a ROM stockpile prior to commissioning of the concentrator in Q109. The mine should be in steady state production from H209 of 250koz pa (3PGM+Au). The total resource of 11.4Moz including reserves of 4.4Moz will support a mine life of at least 16 years, for which an off-take agreement has been signed with Northam. In addition to C\$93m raised last year and a US\$46m bridging loan, Platmin is in the process of securing project finance of US\$200m to fund c US\$213m capex.

### Project pipeline: Two in development, one in exploration

On the eastern limb, Mphahlele's feasibility study should be completed by the end of this year, while Grootboom's will be finalised in early 2009. Applications for mining rights at both projects have been accepted by the Department of Mineral Affairs and Energy and are expected to be awarded in early 2009. With a total resource of 121.4Mt at 4.57g/t containing 17.84Moz, Mphahlele could be producing by 2013 with steady state production rates of 250koz pa. Grootboom is smaller with a resource of 3.0Moz and medium-term potential for production of 86koz pa over 11 years. Platmin's fourth project, Loskop, is funded and operated by Lonmin and has a resource of 12.6Mt at 4.35g/t containing 1.8Moz (2PGM+Au).

### Sensitivities

Commissioning a new mine can be subject to delays. Nevertheless, Platmin has an experienced team and a track record of hitting targets. It also has contingencies in place at Pilanesberg to mitigate potential water or power shortages.

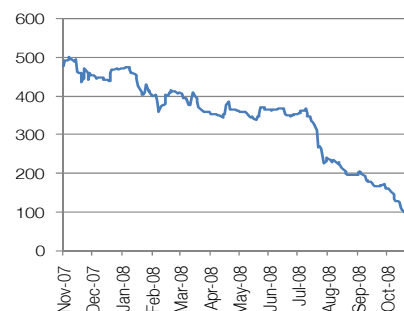
### Valuation: Strong fundamentals

Along with the rest of the sector, Platmin has been impacted by weak PGM prices. With a low-cost, open pit mine about to go into production on the western limb, the fundamentals of this business should support a recovery in the share price.

**Price** 58p\*  
**Market Cap** £65m

\*priced as at 31 October 2008

#### Share price graph



#### Share details

**Code** PPN  
**Listing** AIM, TSX  
**Shares in issue** 111.6m

#### Price

**52 week** High Low  
 492.5p 58.0p

#### Balance Sheet as at 31 August 2008

**Debt/Equity (%)** 30.3  
**NAV per share (c)** 142.5  
**Net cash (US\$m)** 13.3

#### Business

Platmin has four PGM projects, namely Pilanesberg (where first production is imminent) as well as Mphahlele and Grootboom where feasibility studies are well underway. At Loskop, exploration is being funded by JV partner Lonmin. With the exception of Mphahlele (54.3%), Platmin owns 72.4% of its projects.

#### Bull

- Low-cost, open-pit, western limb, PGM production by Q109
- Pipeline of exploration and development projects

#### Bear

- Potential for delays to commissioning of Pilanesberg concentrator
- Highly leveraged

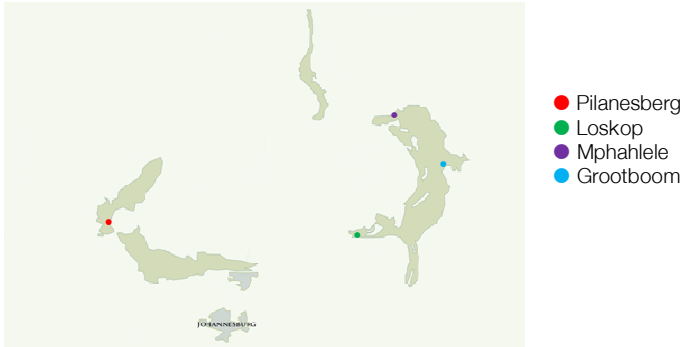
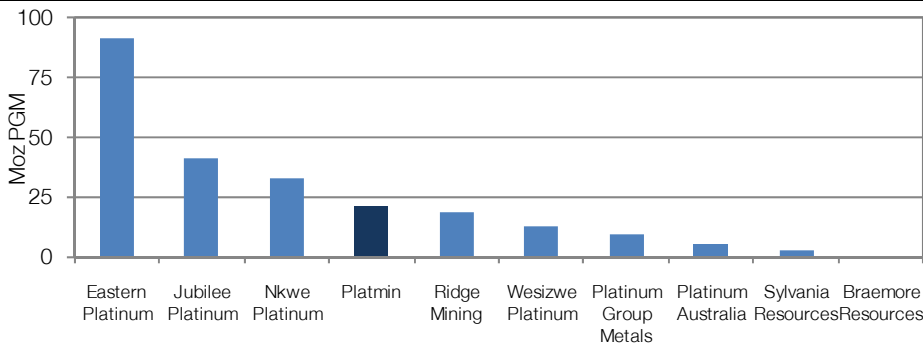
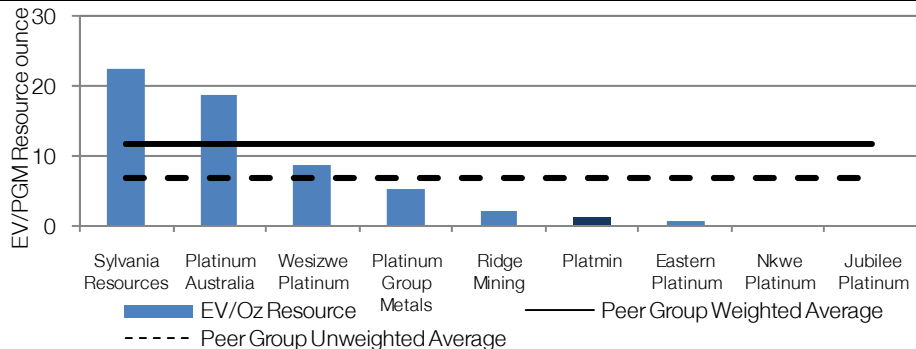
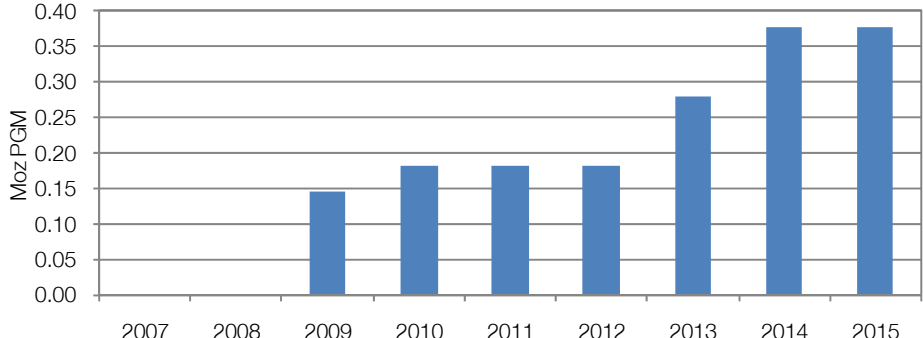
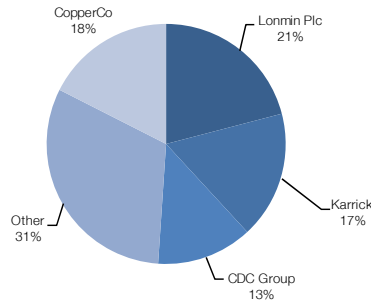
#### Analysts

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 cgibson@edisoninvestmentresearch.co.uk  
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 mstarke@edisoninvestmentresearch.co.uk

## Consensus estimates

Year End	Revenue (US\$m)	PBT* (US\$m)	EPS* (¢)	DPS (¢)	P/E (x)	Yield (%)
02/07	0.0	(7.0)	(9.0)	0.0	N/A	N/A
02/08	0.0	(9.1)	(9.0)	0.0	N/A	N/A
02/09e	4.1	(27.6)	(25.3)	0.0	N/A	N/A
02/10e	286.0	128.8	85.7	0.0	1.1	N/A

Note: \*PBT and EPS are normalised, excluding goodwill amortisation and exceptional items. £1= US\$1.6

Key criteria		
Investment criteria	Summary	Comment
In production	X	First production expected from Pilanesberg in Q109
Shallow resource	✓	Open pit with potential for underground mining between 150m and 500m on the western limb, while eastern limb projects start at surface but increase to greater depths.
Western Bushveld	✓	Pilanesberg Platinum Mine located on the western limb
Access to infrastructure	✓	Agreement with Eskom for 37MVA of new power supply at Pilanesberg as well as standby generation capacity. At Mphahlele, water allocation and temporary allocation of 5MVA
Vertical integration	✓	Exploration, production, beneficiation and off-take agreement signed with Northam Platinum; potential plan for smelter construction
Location of projects		Future catalysts
		<ul style="list-style-type: none"> <li>Commissioning of the concentrator at Pilanesberg</li> <li>First production from Pilanesberg</li> <li>Outcome of feasibility studies at Mphahlele and Grootboom projects</li> <li>Award of mining rights at Mphahlele and Grootboom</li> </ul>
Attributable mineral resource		Non-Executive Chairman
		Mr Rupert Pardoe started his career at Anglo American where he held various roles over a 20-year period, including that of finance director from 1997 to 2001. Pardoe has served on the boards of several companies and was appointed to the Platmin board in November 2005.
Attributable EV/resource		Chief Executive Officer
		Mr Ian Watson has held senior positions at a number of South African mines. He led the start-up of Northam Platinum and later served as its managing director. Watson was appointed to the Platmin board in August 2004.
Forecast attributable mine production		Major shareholders
		



# Ridge Mining

## Investment summary: Production imminent

With mining already underway at the most advanced of its projects (Blue Ridge), the management of Ridge Mining has confirmed that it is on target to produce its first concentrate this year. In the meantime, a bankable feasibility study has been completed on the second project, Sheba's Ridge, early indications from which suggest that it could be worth several multiples of the Blue Ridge project.

### Blue Ridge

The Blue Ridge deposit, on the eastern limb of the Bushveld Complex, is almost unique in that it has a low chrome content (<2%), which means that it avoids the smelting difficulties usually associated with eastern limb ore. At a shallow depth and accessed by decline shaft, the company is mining the ore body via a narrow, 'efficient cut' mining method at a rate of 120ktpm. It will produce 73,335oz of platinum, 35,186oz of palladium and 12,593oz of rhodium per annum for over 20 years, at a cost of US\$450 per platinum equivalent ounce. The project is fully funded and plant commissioning is imminent. Full production is anticipated in mid-2009.

### Sheba's Ridge

Located approximately 14 miles from Blue Ridge, the Sheba's Ridge deposit comprises 716Mt of ore at a grade of 0.19% nickel and 0.91g/t (2PGM+Au) containing 1.36Mt and 20.9Moz in a style of mineralisation akin to dilute Merenksy Reef. The bankable feasibility study at Sheba envisaged mining at a rate of 18Mtpa to produce 23,000t of nickel and 394,500oz (3PGM+Au) per annum for over 20 years at a cash cost of US\$1.30/lb Ni and an initial capital cost of US\$707m.

### 'Base case' valuation of US\$7.13 per share

At a long-term platinum (Pt) price of US\$1,470/oz and a palladium (Pd) price of US\$349/oz, we estimate that Blue Ridge contributes a value of US\$1.98 to each Ridge Mining share. At a nickel price of US\$22,500/tonne and a copper price of US\$6,053/tonne, a further US\$5.14 is contributed by the company's likely 61.5% interest in Sheba's Ridge. Assuming a decline in metal prices to the lower of the currently prevailing spot price or Edison's long-term price forecast generates a 'worst case scenario' valuation for Ridge of US\$2.49 (136p) per share.

### Edison estimates

Year End	Revenue (US\$m)	PBT* (US\$m)	EPS* (¢)	DPS (¢)	P/E (x)	Yield (%)
12/07	1.3	(3.1)	(8.6)	0.0	N/A	N/A
12/08	2.7	(9.6)	(10.5)	0.0	N/A	N/A
12/09e	53.1	16.8	12.7	0.0	3.3	0.0
12/10e	63.8	22.9	17.4	0.0	2.4	0.0

Note: \*PBT and EPS are normalised, excluding goodwill amortisation and exceptional items. £1=\$1.60

**Price** 27.5p\*  
**Market Cap** £23m

\*priced as at 31 October 2008

#### Share price graph



#### Share details

**Code** RDG  
**Listing** AIM  
**Shares in issue** 91m

#### Price

**52 week** High Low  
 140.0p 21.5p

#### Balance Sheet as at 30 June 2008

**Debt/Equity (%)** N/A  
**NAV per share (p)** 56  
**Net cash (US\$m)** 7.7

#### Business

Ridge Mining is a UK-domiciled mining house that is developing two PGM projects on the Bushveld Complex called Blue Ridge (in which it has a 50% interest) and Sheba's Ridge (in which it has a 39% interest with an option to take it to a 61.5% interest).

#### Bull

- Potential for EPS of 9.6p and DPS of 11.8p from Blue Ridge alone
- 100% backup Genset power capacity installed at Blue Ridge


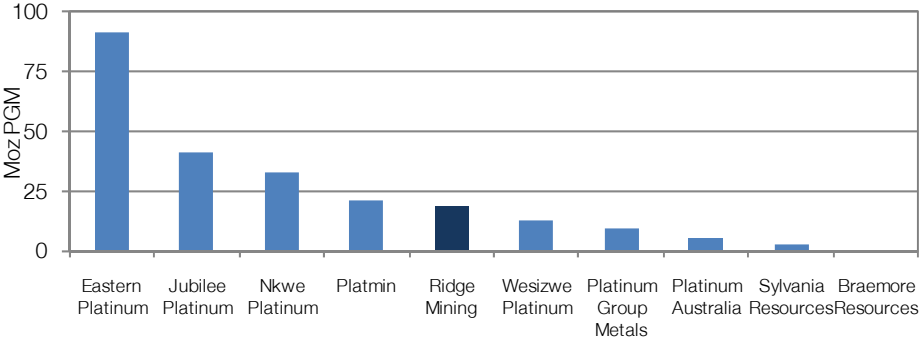
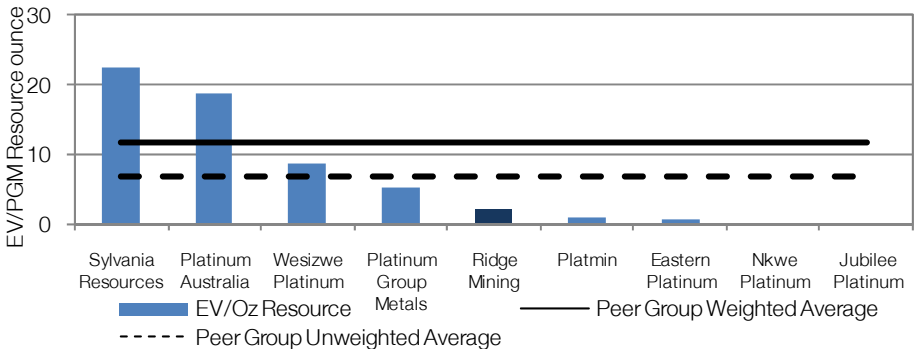
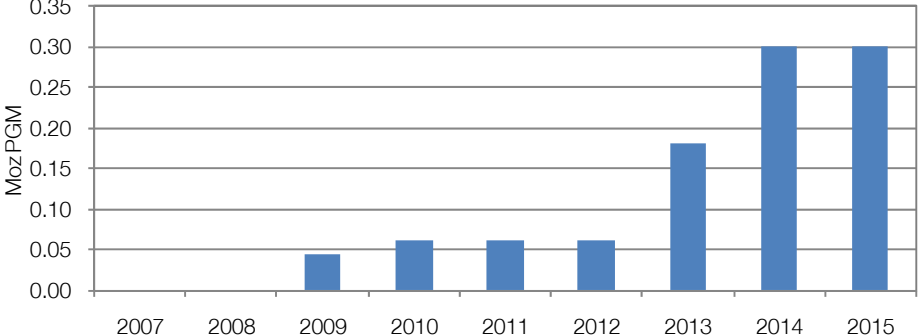
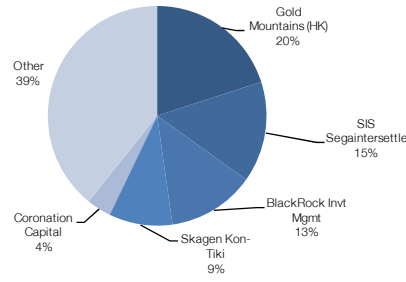
#### Bear

- Long lead time before development of Sheba's Ridge
- Power supply to Sheba's uncertain

#### Analysts

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 cgibson@edisoninvestmentresearch.co.uk  
**Michael Starke** 020 3077 5725  
 mstarke@edisoninvestmentresearch.co.uk



Key criteria		
Investment criteria	Summary	Comment
In production	✓	Mining underway; plant commissioning imminent; full production mid-2009
Shallow resource	✓	Average depth less than 300m for 10 years; maximum depth 800m
Western Bushveld	X	But ore low in chrome and more akin to western Bushveld ore
Access to infrastructure	✓	2MVA power line installed; 10MVA line being installed; 100% Genset backup capacity
Vertical integration	✓	Off-take agreement with Impala Platinum at Blue Ridge
Location of projects		Future catalysts
		<ul style="list-style-type: none"> <li>Plant commissioning and concentrate production (imminent)</li> <li>Full production (mid-2009)</li> <li>Subsequent production enhancement plans include (subject to electricity supply constraints) the development of a tailings re-treatment operation to produce a ferrochrome concentrate as well as the sinking of a small shaft on-reef to increase production to closer the 2.4Mtpa mill capacity</li> <li>Result of independent smelting study at Sheba's Ridge</li> <li>Commencement of Sheba's Ridge</li> </ul>
Attributable mineral resource		Non-Executive Chairman
		Mr Oliver Baring was former MD of UBS Corporate Finance Division, responsible for the Africa and Mining divisions. He is a veteran of the Anglo American/De Beers group in the US, UK and South Africa, and was previously a partner of Rowe and Pitman.
Attributable EV/resource		Chief Executive Officer
		Mr Terence Wilkinson has over 40 years' experience in the industry and was a former chief operating officer at Lonmin.
Forecast attributable mine production		Major shareholders
		

# Sylvania Resources

## Investment summary: Lower risk, higher margin

Sylvania Resources' growth strategy is unique among the junior PGM sector. Using the cash generated by its tailings retreatment operations, the company is expanding its portfolio of PGM exploration and development assets with the medium-term objective of establishing itself as a shallow, hard-rock miner.

### Sylvania Dump Operations ramps up

Sylvania's primary operation is the recovery of PGM from chromite tailings on both the western and eastern limbs. Although production volumes and feed grades are lower than a typical hard-rock mine, these surface retreatment operations produce PGMs at significantly lower costs (A\$408/oz in FY08 of an average basket price of US\$2,626/oz). In FY08, the company produced 14,224oz (3PGM+Au) from its recovery plants at Samancor's Millsell and Steelport mines. To treat additional feedstock secured from Samancor (300ktpa) and potentially Lonmin (250ktpa), the Mooinooi and Lannex plants are being constructed at a capital cost of A\$31.6m. They have the potential to produce 9,500oz pa at a combined feed rate of 550ktpa, at a grade of 1.4g/t and 40% recovery, and will be commissioned in H109. In addition, the company recently announced plans to develop two further new plants.

### CTRP output increases

Located at the Kroondal Platinum Mine on the western limb, the CTRP has recovered PGM from nearby tailings since January 2005. Sylvania has a limited role in the management of the plant, which in FY08 increased production by 33%. During that period, Sylvania's attributable 2,466oz generated revenue of A\$5m.

### Everest North

Sylvania has an earn-in to the Everest North project and is negotiating with Aquarius Platinum in this regard. Nevertheless, Sylvania is proceeding with a feasibility study of the project, which has resources of 5.1Mt at 4.7g/t containing 0.8Moz.

### Sensitivities and valuation

Although its revenues and share price have been impacted by the weaker PGM market, with net cash of A\$48.7m and high operating margins, Sylvania is relatively protected from fluctuations in PGM prices. Provided it continues to secure PGM feedstock, Sylvania should be able to fund its growth from these healthy cash flows.

### Consensus estimates

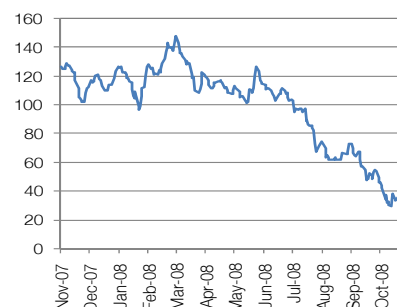
Year End	Revenue (A\$m)	PBT* (A\$m)	EPS* (¢)	DPS (¢)	P/E (x)	Yield (%)
06/07	0.4	(11.5)	(7.6)	0.0	N/A	N/A
06/08	32.8	17.0	5.6	0.0	17.6	N/A
06/09e	83.4	60.5	16.5	0.0	6.0	N/A
06/10e	174.7	140	43.7	0.0	2.3	N/A

Note: \*PBT and EPS are normalised, excluding goodwill amortisation and exceptional items. Price converted at £1 = A\$2.499.

**Price** 39.5p\*  
**Market Cap** £71m

\*priced as at 31 October 2008

#### Share price graph



#### Share details

**Code** SLV  
**Listing** AIM, ASX  
**Shares in issue** 180.0m

#### Price

**52 week** High Low  
 149.0p 28.5p

#### Balance Sheet as at 30 June 2008

**Debt/Equity (%)** 0.4  
**NAV per share (c)** 49.9  
**Net cash (A\$m)** 43.3

#### Business

Sylvania Resources has a 74% interest in the Sylvania Dump Operations (SDO), which recovers PGMs from Samancor's chromite tailings. The company also has a 25% interest in the Chromite Tailings Retreatment Project (CTRP) managed by Aquarius Platinum. In addition, Sylvania has an earn-in agreement at Everest North, where it is in the process of completing a feasibility study. SLV also has a 16% interest in ASX-listed Great Australian Resources.

#### Bull

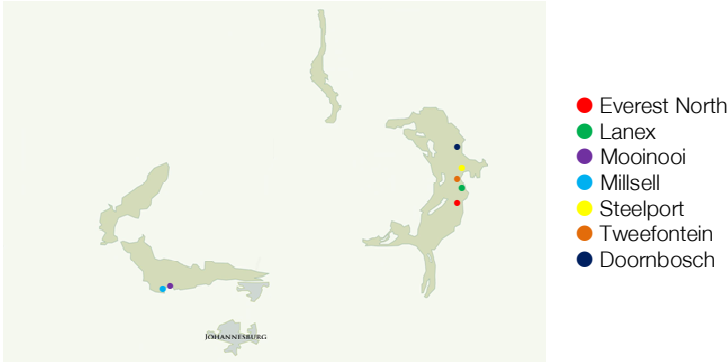
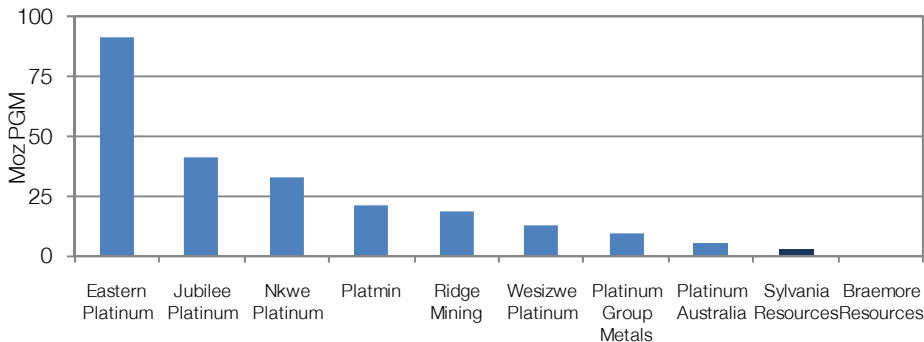
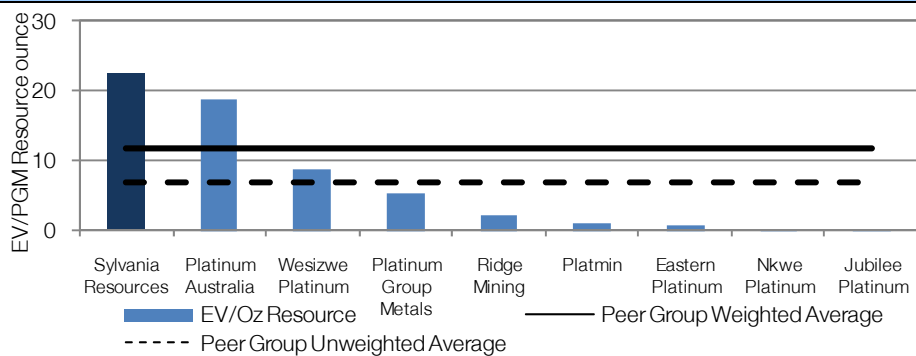
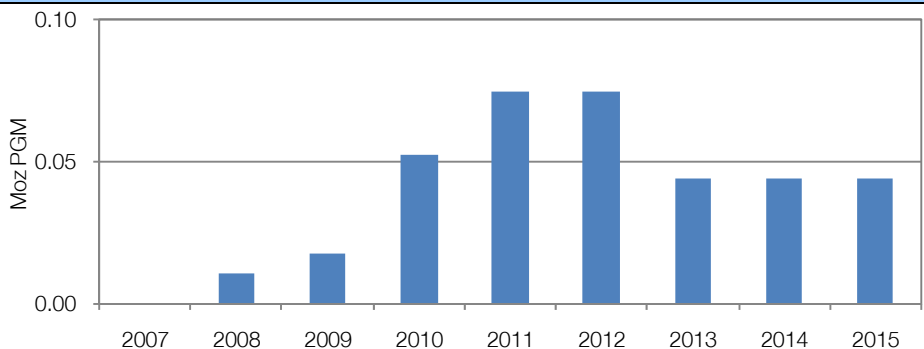
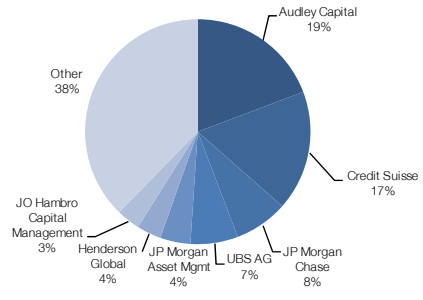
- Cash generative with high margins
- Low-technical risk

#### Bear

- Future of Everest North project
- Ability to secure long-term supply of PGM feedstock/tailings

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Key criteria		
Investment criteria	Summary	Comment
In production	✓	FY08 production of 16,690oz from three PGM recovery plants
Shallow resource	✓	PGM recovery from surficial tailings dumps
Western Bushveld	✓	Millsell, CTRP and Mooinooi plants located on the western limb
Access to infrastructure	✓	Located adjacent to current mining operations. Low power and water requirements, therefore relatively 'immune' to Eskom load-shedding
Vertical integration	X	Exploration, processing and off-take agreements, but no mining
Location of projects		Future catalysts
		<ul style="list-style-type: none"> <li>• Completion of construction at Lannex and Mooinooi PGM recovery plants</li> <li>• Commissioning and first production from Lannex and Mooinooi</li> <li>• Construction of two new PGM recovery plants at Tweefontein and Doornbosch</li> <li>• Outcome of Everest North feasibility study</li> <li>• Securing earn-in at Everest North from Aquarius Platinum</li> </ul>
Attributable mineral resource		Non-Executive Chairman
		Mr Richard Rossiter is an international resource sector specialist with experience and qualifications in financial markets and industry with an emphasis on investment decision-making, deal origination, research, management and strategy. Rossiter leads the board in implementing the company's strategy of becoming a significant PGM producer.
Attributable EV/resource		Managing Director
		Mr Terry McConnachie is well-known in the industry with 25 years' experience in mining and beneficiation of ferroalloys and precious metals. McConnachie has identified and founded several new mining operations, including South African Chrome and Alloys Ltd, listed on the Johannesburg Stock Exchange.
Forecast attributable production		Major shareholders
		

# Wesizwe Platinum

## Investment summary: Fast track to production

JSE-listed, Wesizwe Platinum is developing a PGM mine known as the 'Wesizwe Project'. Following restructuring of the WBJV, Wesizwe will own 100% of this mine and 26% of two other western limb projects, controlled by Platinum Group Metals.

### The Wesizwe Project

Wesizwe's main project has mineral resources of 82t at 5.9g/t for 13.5Moz (3PGM+Au), of which 100% will be attributable to Wesizwe once the restructuring is complete. Situated at a depth of approximately 720m, the Merensky and UG2 reefs are, on average, 1.5m thick and 20m to 60m apart, while roughly two thirds is sub-horizontal. This allows for a combination of mechanised and conventional mining with initial extraction focused on the Merensky reef, which hosts some 63% of the project's platinum resource.

### Mine construction commences

Following a positive outcome to the feasibility study, development of the underground mine and surface concentrator commenced in Q408. Construction should take five years; first concentrate is expected towards the end of 2013. With operating costs of ZAR363/t (US\$36/t), the company plans to increase production to steady state levels of c 230ktpm by 2016. The project has a capex requirement of ZAR5.6bn (US\$560m), to be funded by a combination of debt and equity.

### Sensitivities: Closing the deal

The restructuring transaction is subject to several conditions precedent, including regulatory approvals and commercial agreements. While there may be delays satisfying these conditions, we expect the restructuring to go ahead. In addition to PGM prices, Wesizwe's success is also dependent on raising the required capex.

### Valuation

At the end of 2007, Wesizwe had cash of ZAR247.5m, subsequently raising ZAR202.5m in July 2008. Taking into account the 211.9m shares to be issued to Anglo Platinum as part of the restructuring, Wesizwe trades around our current estimated book value of ZAR1.85 per share, a significant discount to the mine's NPV<sub>15</sub> of ZAR9.56 per share presented in the BFS. Once the restructuring is finalised and financing secured, we expect a re-rating of Wesizwe shares.

## Consensus estimates

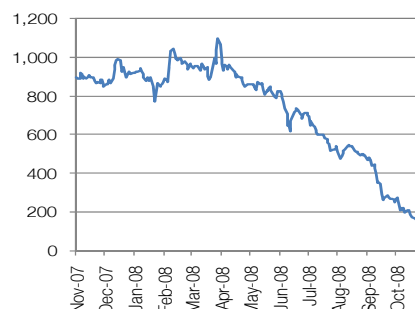
Year End	Revenue (ZARm)	PBT* (ZARm)	EPS* (ZAR)	DPS (ZAR)	P/E (x)	Yield (%)
12/06	0.0	(19.5)	(5.3)	0.0	N/A	N/A
12/07	0.0	(90.8)	(19.2)	0.0	N/A	N/A
12/08e	0.0	(80.4)	(14.9)	0.0	N/A	N/A
12/09e	0.0	(72.5)	(14.9)	0.0	N/A	N/A

Note: \*PBT and EPS are normalised, excluding goodwill amortisation and exceptional items.

**Price** ZAR2.10\*  
**Market Cap** ZAR1,230m

\*priced as at 31 October 2008

#### Share price graph



#### Share details

Code WEZ  
 Listing JSE  
 Shares in issue 585.5m

#### Price

52 week High Low  
 ZAR11.00 ZAR1.80

#### Balance Sheet as at 31 December 2007

Debt/Equity (%) 3.0  
 NAV per share (ZAR) 2.16  
 Net cash (ZARm) 247.5

#### Business

Under the terms of the restructuring of the Western Bushveld JV (WBJV), Wesizwe Platinum is moving to 100% ownership of its core Frischgewaagd-Ledig project (known as the 'Wesizwe Project') and 26% ownership of Projects 1 and 3, controlled by Platinum Group Metals (PTM). Once the restructuring is finalised, Anglo Platinum will hold 26.6% of Wesizwe Platinum.

#### Bull


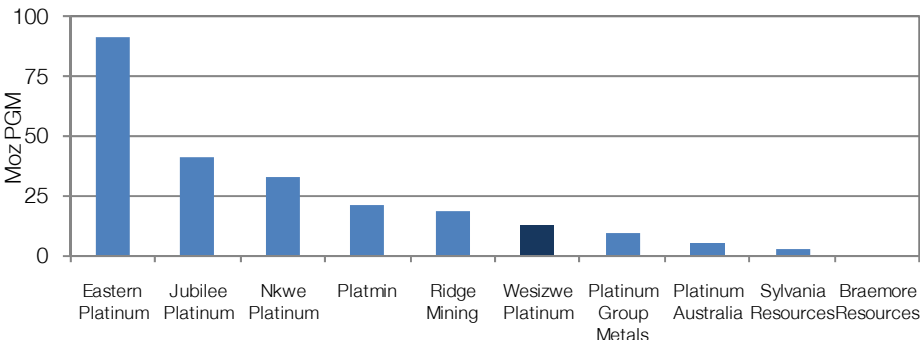
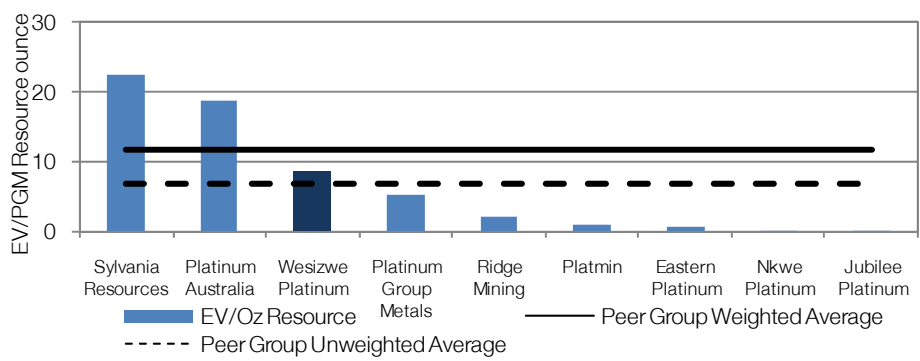
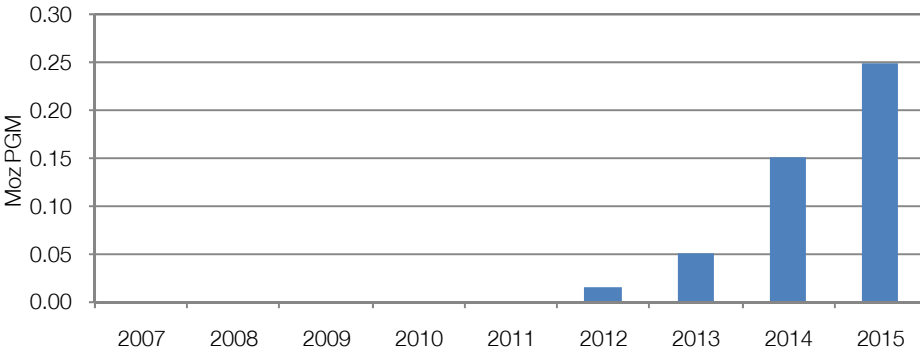
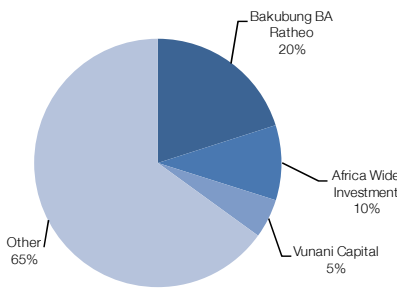
- Shallow, western Bushveld location with good access to infrastructure
- Mine construction commenced, production expected 2013

#### Bear

- Restructuring of WBJV to be finalised
- Capex of US\$560m to be raised

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Key criteria		
Investment criteria	Summary	Comment
In production	X	First production expected in 2013
Shallow resource	✓	Merensky Reef and UG2 <723m depth
Western Bushveld	✓	Located on western limb, south of the Pilanesberg
Access to infrastructure	✓	Commitments for temporary water and power supply received
Vertical integration	X	No greenfield exploration, off-take agreement still to be finalised
Location of projects		Future catalysts
		<ul style="list-style-type: none"><li>• Completion of the restructuring</li><li>• Securing required capex funding</li><li>• Completion of mine construction</li><li>• Production of first ore</li><li>• Production of first concentrate</li></ul>
Attributable mineral resource		Non-Executive Chairman
		Mr Robert Rainey has held positions such as CFO and CEO for several junior mining houses listed in Johannesburg, Canada, London and Australia. His experience in the mining sector spans nearly 20 years across a range of commodities including platinum, gold, chrome, diamonds, copper/cobalt, vanadium and tin mining.
Attributable EV/resource		Chief Executive Officer
		Mr Michael Solomon is a mining engineer with extensive experience in the South African mining sector. In addition to his various sector-based consultancy roles, Solomon has advised both non-governmental and community organisations on various aspects of mining. Prior to his appointment as Wesizwe's CEO, he was contracted to Anglo Platinum as director of the company's mineral and mining rights conversion project.
Forecast attributable mine production		Major shareholders
		

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