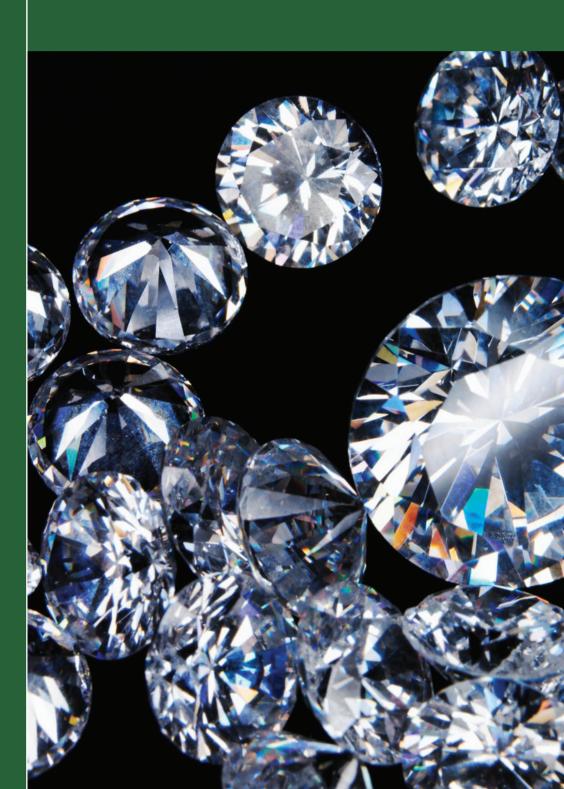


# AIM Diamond Sector Equity and Industry Review



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Contonts	
Executive Summary	3
AIM Diamond and Precious Stone Companies	4
Valuation of Diamond and Gemstone Companies	6
Diamond Company Valuations Market Capitalisation as a Function of Production Market Capitalisation as a Function of Resource Base One-year Performance Technical Trading Ideas	6 7 8 9 10
Diamond Market Fundamentals	11
Supply and Demand Supply Demand Supply-Demand Balance Diamond Prices	12 13 16 18 <b>20</b>
Historic Price Growth	20
Future Price Growth	21 25
Coloured Gems	25
Value Chain Emeralds Sapphire Other Gemstones	26 27 28 28
Diamond and Gemstone Companies on AIM	31
African Diamonds DiamondCorp Firestone Diamonds Gem Diamonds KimCor Kopane Diamond Developments Pangea DiamondFields Petra Diamonds	32 36 40 44 48 52 56 60
Appendix 1 – Country Reviews	64
Appendix 2 – Geology	69
Appendix 3 – From Exploration to Mining	73
Appendix 4 – Valuing Diamonds	75
Appendix 5 – Changing Market Dynamics	76
Appendix 6 – Glossary	79

All prices in this document are as of 30 January 2008

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# Head of Mining

Richard Chase +44 (0)20 7776 6461 richard.chase@ambrian.com Diamond price appreciation is at record rates in large stones, but more subdued in smaller stones

US GDP growth is starting to slow — if this trend worsens we expect diamond price growth to slow

We believe diamond miners and marketers are downplaying the impact of synthetic diamonds

2007 M&A created growth for the acquiring companies, but less value for investors in the companies taken out

Our favoured investments are multi-asset companies such as Petra, undervalued developers such as Kopane and DiamondCorp, and alluvial operators in former conflict regions

# **Executive Summary**

**Prices of large diamonds are appreciating at record rates.** In the year to December 2007 the 4ct polished-diamond price appreciated a staggering 45%. Miners such as Gem Diamonds have targeted mines with high-end stones and are now well positioned to capitalise on this growth.

Small diamond prices are struggling to keep up with inflation, and we do not believe this will change in the near future. One carat cut diamonds appreciated at a sub-inflation 1.5% in the year to December 2007. Furthermore, we believe a squeeze on retail and polishing margins indicates price elasticity of demand, ie, demand falls at higher prices.

Diamond prices are likely to be hit by any global economic slowdown, but this should be offset by increasing penetration of emerging Chinese and Indian markets. Luxury goods are typically the first to be hit in any economic slowdown. The increasing disposable income in the Chinese and, more recently, Indian middle class is driving a 'secondwave' of growth following from the urbanisation- and industrialisationdriven first wave that forced base metal prices up from 2005.

Supply looks set to remain tight until at least 2012. Although there are numerous kimberlite pipes undergoing economic assessment, proving commercial potential really does take a long time. We are unlikely to see production from these assets until 2011 at the earliest.

Synthetic diamonds are here, and represent a real threat to long-term diamond prices despite the (predictable) denials by mining companies and diamond marketers. The new generation of stones can be produced commercially, and are indistinguishable from natural stones to the naked eye. We note industry leader Gemesis, which previously aborted an IPO, has appeared at several events sponsored by a leading Equity Capital Markets player last year. With an IPO and serious cash injection, the industry could be about to face a major shake up.

Acquisitions have been at a premium to the market, but falling share prices meant M&A created little value to shareholders. The average return (since 1 February) on six juniors taken over last year was 6%, although relatively this was better than the rest of the sector (-9%).

Diamond equities performed poorly in 2007 despite the much trumpeted supply-demand gap. The main reason for this was poor financial returns due to the long lead time to define kimberlite resources, and the logistical difficulties in establishing African alluvial operations. Micro-caps ( $\leq$ 15m) fared worst at -44%, but the mid-caps and majors (£60m+) didn't do well either at -13%. The middle-market did best (£15-60m) with a poor 1% average growth.

We believe the best investments are in multi-asset companies where newsflow from multiple projects sustains momentum. It isn't easy to build a portfolio of assets, but Petra's JV approach establishes it as one of our favourites. We think single-asset kimberlite developers will only ever offer a short surge of growth and will struggle to maintain investor interest in the long term if they don't diversify into new projects.

For medium-term growth, we like the alluvial operators opening up central Africa (Central African Republic, Democratic Republic of Congo, Angola). Logistics, infrastructure and politics are difficult but improving, and we think large-scale alluvial operations will profit from rising prices.

Acquisitions in 2007 left only 17 pure diamond companies on AIM

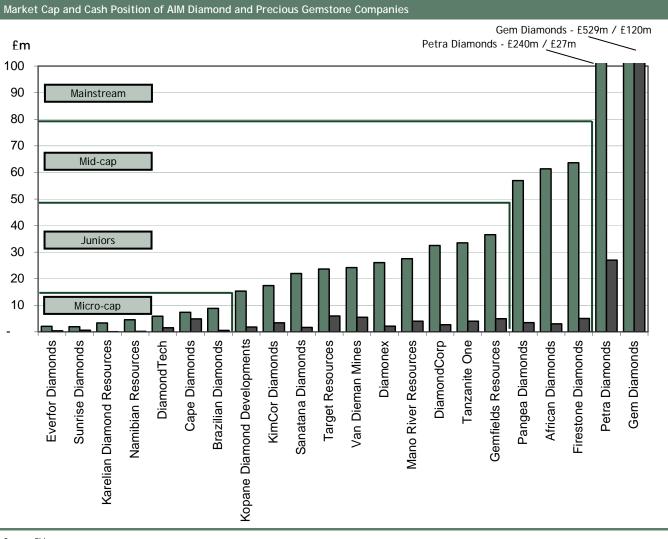
Micro-caps and juniors dominate by volume, with only three midcaps

## AIM Diamond and Precious Gemstone Companies

Last year six juniors were taken over in a flurry of acquisitions, leaving (with new listings) only 17 pure diamond companies on AIM, we've also added the three gemstone companies for comparison. Other companies of note include Noventa, a tantalum producer with subsidiary morganite (emerald family gemstone) production, and Tsar Emeralds, a private emerald producer that may list on AIM in the future. Other diversified diamond companies are River Diamonds (gold), Mano River Resources (with Stellar Diamonds subsidiary) and African Minerals (iron, formerly Sierra Leone Diamonds). Main-board listed Namakwa diamonds is also a new entrant, listing in late 2007.

The market is split between micro-caps, juniors, a small mid-cap sector and mainstream stocks. Gem Diamonds (main board) and Petra Diamonds lead the way, followed by only three mid-caps, while ten juniors and seven micro-caps vie to be the next success story.

The median market cap of the micro-caps (<£15m) is only £4.6m, with juniors (£15-40m) at £25.1m and the three mid-caps (around £60m) at £61.3m. We've also added Main Board-listed Gem Diamonds.



Source: Fidessa

AIM-listed Diamond and Gemstone Companies										
	Ticker	Country	Activity	EV (£m)	Resource (Mcts)	Grade (Cpht)	Value (US\$/ct)	In-situ value (US\$m)	EV/in-situ (US\$m)	08E production (Mcts)
Everfor Diamonds	EVE	Russia	Exploration	1.7	-	-	-	-	-	-
Sunrise Diamonds	SDS	Finland	Explor'n + bulk sampling	1.3	-	-	-	-	-	-
Karelian Diamond Res.	KDR	Finland	Explor'n + bulk sampling	3.2	-	-	-	-	-	-
Namibian Resources	NBR	Namibia	Mining	4.3	-	-	-	-	-	17,000
DiamondTech	DTEC	South Africa	Mining	4.3	1.6	10.0	236.6	184.5	2%	74,520
Brazilian Diamonds	BDY	Brazil	Explor'n + bulk sampling	8.3	-	-	-	-	-	-
Cape Diamonds	CAPE	South Africa	Mining	5.8	0.9	9.1	500.0	233.7	3%	160,704
Kopane Diamond Dev.	KDD	South Africa	Mining + development	13.5	12.5	28.7	69.0	433.0	3%	150,000
KimCor Diamonds*	KMI	South Africa	Mining + development	15.7	1.7	6.0	242.1	205.0	8%	140,000
Target Resources	TGT	Sierra Leone	Mining + development	20.2	-	-	506.0	-	-	-
Van Dieman Mines	VDM	Australia	Development	25.3	11.8	n/a	3.2	19.0	133%	1,500,000
Sanatana Diamonds	SAN	Canada	Exploration	20.3	-	-	-	-	-	-
Diamonex	DON	Botswana + USA	Development + exploration	23.9	3.7	27.5	53.8	99.9	24%	300,000
Mano River Resources	MANA	S.Leone; Liberia, Guinea	Explor'n + bulk sampling	25.8	-	-	-	-	-	-
DiamondCorp	DCP	South Africa	Mining + development	33.5	9.1	38.2	117.3	536.4	6%	133,200
Gemfields Resources	GEM	Zambia	Mining + development	31.7	-	-	-	-	-	-
Tanzanite One	TNZ	Tanzania	Mining + exploration	30.0	73.0	6,600.0	10.5	384.8	8%	1,500,000
Pangea DiamondFields*	PDF	Angola; CAR; DRC; S Af	Development + Explor'n	53.4	1.3	29.1	146.0	97.9	55%	0
Firestone Diamonds	FDI	South Africa	Exploration	60.8	-	-	-	-	-	-
African Diamonds	AFD	Botswana	Development + Explor'n	58.3	3.2	22.0	131.0	207.2	28%	-
Petra Diamonds	PDL	South Africa; Angola;	Mining + development	221.0	71.1	38.1	166.9	5,958.0	4%	250,000
Gem Diamonds**	GEMD	South Africa	Mining + development	409.8	40.6	8.6	212.4	4,325.1	9%	700,000

\*Ambrian acts as Broker to these companies; \*\*Main Board-listed; Company data, Ambrian estimates Source: Company data, Ambrian estimates

Most diamond companies are currently trading in the lower quartile...

... presenting a buying opportunity, but be aware of the one-year plus investment horizon

# Valuation of Diamond and Gemstone Companies

#### **Diamond Company Valuations**

The theme of diamond equities in 2007 was of a sluggish performance for most and exceptional performances from a few. Only one company, Gemfields Resources (emeralds), is trading in the upper quartile of its 12-month range, while a staggering 14 are trading in the bottom quartile (see page 9).

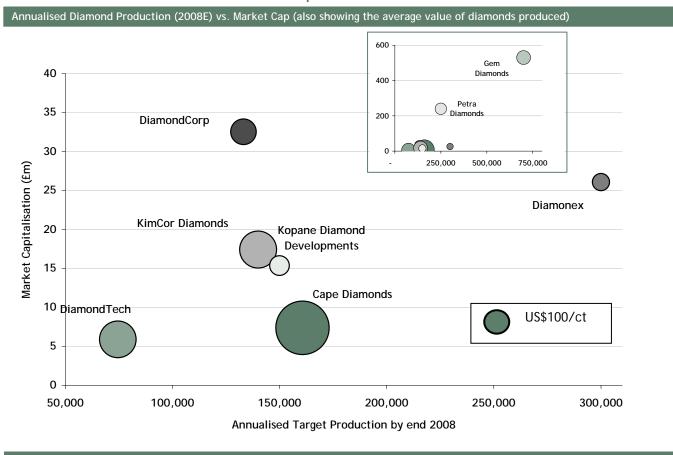
This suggests that there may be good buying opportunities where companies have been oversold or are on the cusp of a significant improvement in their business outlook. We remain very positive on many of the development and growth stories, but warn investors that investment horizons of more than one year are normally required to realise these gains.

By market cap there are, as with other commodity sub-sectors on AIM, loose groups of companies. At the current time we identify four such groups:

- Seven micro-caps (<£10m). These companies are generally pure exploration companies whose valuation tends to be primarily qualitative. However, there are some emerging producers such as DiamondTech which we think offer great potential.
- Ten small-caps (£15-40m). These are typically companies that are either in production or are in the process of moving toward production through late-stage development or construction. The only pure explorer in the group, Sanatana Diamonds, is undertaking advanced exploration on an attractive portfolio. Our favoured investment opportunities are KimCor<sup>1</sup>, Kopane Diamond Ventures, and DiamondCorp, although the latter two require resolution of average diamond value.
- Three mid-caps (~£50-70m). These companies have at least one proven asset at an advanced development stage, eg, AK6 for African Diamonds, or a suite of highly attractive projects at an intermediate stage of development (Botswana kimberlites for Firestones, African alluvial projects for Pangea DiamondFields<sup>1</sup>). The valuation of these companies is typically production- and earnings-related, although none have commercial operations as yet.
- Large-cap: Gem Diamonds (main board) and Petra. New to this market in 2007, Gem Diamonds has what one would expect from a large-cap diamond stock: multiple projects geographically diversified in both alluvial and kimberlite mining. Perhaps unusually, or perhaps relating to the company's current strong cash position, Gem Diamonds is undertaking only a small amount of exploration, preferring to focus on acquisitions. Petra built its position from an aggressive JV and acquisition strategy.

The companies with above-average liquidity and share price performance are exclusively from the last two groups; clearly this is where the most likely secondary market trading opportunities are going to be found.

<sup>&</sup>lt;sup>1</sup> Ambrian acts as a broker to this company



#### Market Capitalisation as a Function of Production

Source: Ambrian

#### Diamond Production and Value

	•			
Company	Market cap (£m)	08E production (cts)	'08E avg. value (US\$/ct)	Type of deposit
Cape Diamonds <sup>1</sup>	7.4	160,000 <sup>1</sup>	500	Alluvial
DiamondCorp	32.5	133,200	117	Kimberlite
DiamondTech	5.9	74,000	237	Kimberlite
Diamonex	26.1	300,000	54	Alluv/Kimb/Tails
Gem Diamonds	529.8	700,000	430	Kimberlite
KimCor Diamonds	17.4	140,000	242	Kimberlite
Kopane Diamond Developments	15.3	150,000	69	Kimberlite
Petra Diamonds	240.1	250,000 <sup>2</sup>	167	Kimberlite/Alluv

1: Pending successful ramp up; 2: Excludes Cullinan; Source: Company reports, Ambrian estimates

This analysis shows that there are only exceptions rather than rules when using peer comparison metrics to value diamond companies. For preproduction companies investors are left to speculate on the likely grades and values after the more simple tonnage is calculated. One thing we would caution on is using DCF calculations to value diamond companies ahead of resource grade and value delineation. The 'estimated' grades and values can only be considered speculation, and where research has been written as Financial Promotion, it is not surprising to see such estimates nearly always being quite high.

Resources and In-situ Value					
	EV (£m)	Attrib. resource (Mcts)	Diamond value (US\$/ct)	In-situ value (US\$m)	EV/ in-situ value
Everfor Diamonds	1.7	-	-	-	-
Sunrise Diamonds	1.3	-	-	-	-
Karelian Diamond Resources	3.2	-	-	-	-
Namibian Resources	4.3	-	-	-	-
DiamondTech	4.3	1.6	236.6	184	2%
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Target Resources	20.2	-	506.0	-	-
Sanatana Diamonds	20.3	-	-	-	-
Diamonex	23.9	3.7	53.8	100	24%
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Petra Diamonds	221.0	71.1	166.9	5,958	4%
Gem Diamonds	409.8	40.6	212.4	4,325	9%

### Enterprise Value as a Function of Resource Base

\*Ambrian acts as a broker to this company; Source: JORC/43-101/SAMREC resources as well as non-compliant resources in places, Ambrian

The first thing to note about these valuations is the lack of an in-situ value for a large number of diamond companies. This is common for alluvial producers, where delineation of a JORC/SAMREC resource is extremely difficult. For kimberlite miners, it is common for companies to have indicative tonnes, value and grade, driving a valuation well ahead of a JORC/43-101 resource.

For production-based peer comparisons, in-situ value is of limited use, with exceptions common

Petra's large promising Angolan properties, with no resource defined, exemplify the difficulties As for peer comparison metrics based on production, we believe the above list demonstrates (again) more exceptions that rules. In our experience, it is common to value alluvial companies at 7-10% of their in-situ value, although that in-situ value is often based on an internal calculation only.

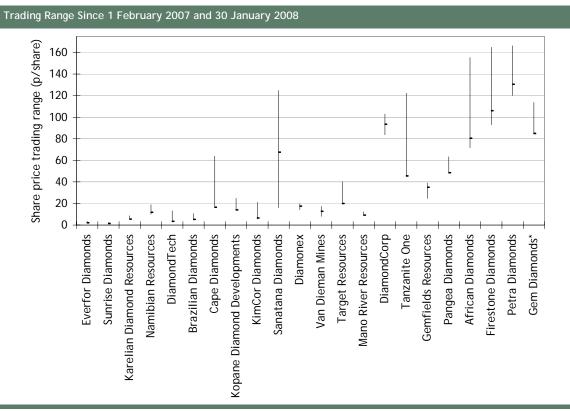
Amongst the producing companies with kimberlite and tailings retreatment projects, the typical value range is 22-30% of the in-situ value of the resources. The difference in the valuation multiple between alluvial projects and kimberlite and tailings re-treatment projects is understandable in the context of the geological characteristics and confidence levels attached to the different deposit types.

Near one end of the valuation metrics is Petra, with a large resource at Cullinan. At the other end, nearly all of the value of near-term producer Diamonex is in its mined resource.

There are two stand out exceptions. Cape Diamonds is understandably at a discount, its assets being in development and mired in operational and management issues, while established producer TanzaniteOne is valued lower than producing diamond companies as it trades in a less highprofile stone and is currently ramping up production. The average return for diamond and gemstone companies on AIM in 2007 was -9%

### **One-year Performance**

Apart from one star performer (Sanatana) the performance of AIM diamond companies over the last 12 months was weak. Average returns were -9%, but outside Sanatana this drops to -24%. Growth is stagnant, and most share prices are receding, with a staggering 15 out of 22 companies trading in the bottom quartile of their 12-month range vs. one in the top quartile.



\*Gem Diamonds divided by 10, Source: London Stock Exchange, Ambrian

#### Where Was the Value in 2007?

**Break-out juniors** once again proved the high-risk, high-reward nature of diamond exploration, with Sanatana Diamonds returning around 100%.

**Not Developers** — Mixed results came from developers: Diamonex and Van Dieman were up around 40%, but Pangea<sup>2</sup> and African Diamonds returned around -20%.

Not Mergers (for investors) — Little uplift was seen for investors in the juniors that were taken over in 2007. The average return for an investor holding (on 1 February 2007) all six of the juniors that got taken out last year was 6%. The reason for this was that the majority of companies were taken out at a premium, but to receding share prices. However, to the acquiring companies, we believe the acquisitions offered a range of gains including an increased shareholder base, cost savings and acquisition of management expertise (to name a few).

Not Majors — Fundamentally we believe the large caps are the best diamond investment vehicle, as they have (1) the pipeline of junior to mature projects to provide smooth growth, and (2) the money required to

The best returns came from highrisk, high-reward junior explorers

Investors in juniors taken over in 2007 saw little uplift compared with prices on 1 February 2007

<sup>&</sup>lt;sup>2</sup> Ambrian acts as a broker to this company

Only four of our reviewed stocks had higher daily trading volumes in 4Q07 than over the full year...

... and only four stocks appreciated in price in 4Q07...

... while no stock showed both a rise in volume and price in 4Q07

undertake expensive exploration and bulk-sampling. This wasn't the case over the last 12 months, with both Petra and Gem down 10-15%.

#### **Technical Trading Ideas**

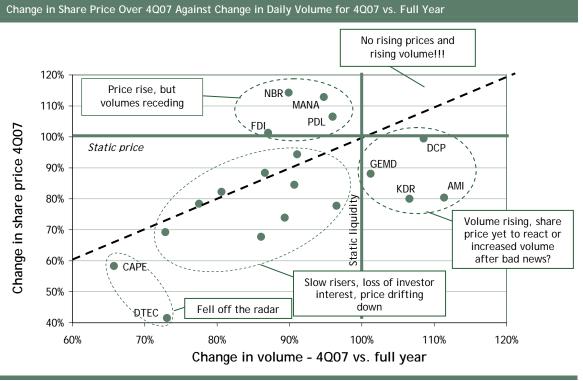
Looking at trading volumes as an indicator of rising stars, the graph below shows 4Q07 daily value traded as a percentage of full-year daily value traded against the change in share price over 4Q07. We divide the diamond and gemstone companies into four groups:

Growth stocks — Interestingly, the four stocks that showed moderate growth in 4Q07 all saw receding volume. This is probably related to an overall market slowdown.

Slow risers — Although doing nothing 'wrong', lack of news or slow development timeframes led to a loss of interest, and resultant low liquidity led to share prices ticking down.

**Rising or Falling Stars** – Rising volumes are an indication something is going on. This could be either (a) increased trading by smart investors ahead of likely growth, or (b) a sell-off either after or ahead of bad news driving the price down.

**Off the radar** – New stocks or maligned investments have driven liquidity and the share price through the floor. Dog or buying opportunity, we certainly like DiamondTech's story and it seems very cheap right now.



Source: Fidessa, Ambrian

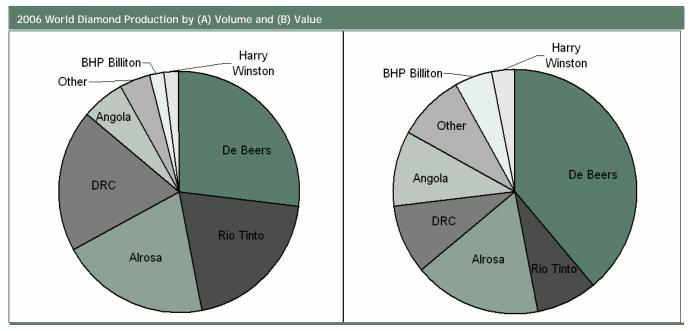
Following from a first wave of base metal price appreciation, we think emerging markets are set to drive demand increases for diamonds

Production is dominated by the majors

# **Diamond Market Fundamentals**

Diamonds continue to hold their place by value in the top ten commodities in the traded minerals basket despite impressive increases in the price of most raw materials. A major surge in Chinese demand for diamonds has lagged behind that for base metals because diamond demand is a result of wealth generation, which follows as a 'second wave' behind the first wave of urbanisation and industrialisation with its own demand for input materials such as copper (wiring and plumbing), tin (solder), lead and platinum (automotive) and nickel (steel).

Significant changes have swept the diamond industry since 2000, affecting the geographical distribution of the supply base, mine ownerships and marketing. De Beers, for over a century the custodian of the industry, has been privatised and has abandoned its monopoly Central Selling Organisation. It is now challenged in both mined output and the distribution of rough diamonds by Rio Tinto, BHPB and Russia's Alrosa, among others. Its response has included entering the polished diamond and jewellery markets via retail outlets, including in the US. There is also the perhaps over-publicised issue of 'conflict' diamonds, centred on Africa's more politically troubled nations.



Source: Rio Tinto - Harry Winston production via share in the Diavik Diamond Mine (ex Aber)

Proliferation of junior diamond stocks followed forecasts of favourable supply-demand balance

The proportion of total earnings attributable to diamonds is small for the major mining houses, but a healthy list of juniors — some in joint ventures with the majors and based in sound geographical and political areas — offer a range of pure-diamond equity investment vehicles.

Over the last few years companies and commentators have repeated various forecasts of a supply deficit fuelling rising prices, in part to support their activity in the equity capital markets. With supply growth of around 1% pa and demand growth of some 3% pa, prices should go up — but this is overly simplistic. In fact, a surplus of supply of small diamonds has led to falling prices, while large diamonds have appreciated in price rapidly, fuelled by growth in the high-end jewellery market.

Hoarding is significant, but we believe this overhang of supply is unlikely to affect markets significantly

Although now largely over, destocking by De Beers had a major impact on supply...

... with juniors now looking to cash in on rising prices, and JVs are common

## Supply and Demand

With few exceptions, every diamond that has been cut in to a gem still exists. They could, therefore, be sold on the market. This is unlikely in the case of most of recent sales, as retail mark-ups have been so high. Estimates of this hoard are in the region of 500m carats, more than 50x the annual mined production.

Putting this theoretical overhang aside, the diamond market is not fundamentally different from the markets for other minerals in so far as demand for diamonds tracks GDP closely; there are no longer significant producer inventories and prices are not inconsistent with producer cost structure.

De Beers' now has a policy of not holding large stocks of uncut diamonds, and, along with the demand for diamonds from India and China, this has resulted in a growing shortage and producers are now seeking to increase the supply.

None of this is lost on the junior companies on AIM. The level of exploration activity is intense. Diamonds are becoming the cash generator for an increasing number of countries and companies. So, it is likely to be marketing, not mining, where the pressure will be felt. De Beers' backing of a clutch of juniors in places as diverse as Canada, Angola, Namibia and the DRC is, to an extent, being copied by BHPB and Rio Tinto.

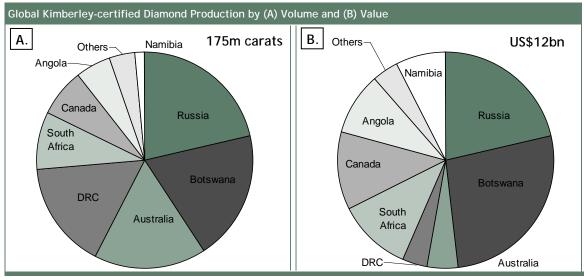
Joint Ventures and Investments on AIM				
Company	JV Partner/Equity Investor	Project/Country		
African Diamonds	De Beers	AK6 / Botswana		
Firestone Diamonds	De Beers	Buffels River / South Africa		
KimCor Diamonds	De Beers	Kimberley / South Africa		
Mano River Resources	Petra Diamonds	Kono / Sierra Leone		
Mwana Africa	Rio Tinto / BHPB	Australia / DRC		
Petra Diamonds	BHP Billiton	Alto Cuilo / Angola		
River Diamonds	Rio Tinto	Batovi + Alto Paraguai / Brazil		
Sanatana	Rio Tinto	Mackenzie / Canada		
Sunrise Diamonds	BHP Billiton	Finland		

Source: Company information, Ambrian

Russia and Botswana dominate supply, with Canada and South Africa also major contributors

#### Supply

Globally, 22 countries mine Kimberley-certified diamonds, although including non-certified sources 25 countries produce diamonds. Production by volume is dominated by Australia, Botswana, Russia and the DRC, but South Africa and Canada are major producers by value terms. A short review of each of the main countries of production is given in the Appendix.



Source: Kimberley Process

# Canada is the major contributor to diamond supply growth

#### Historic Supply Growth

In the last eight years the supply of diamonds has increased by almost 60% (15% CAGR), with the volume of rough diamonds to the world market nudging up to 180mct in 2007. Over that time, the majority of supply increases have come from Canada, whilst Russia, Botswana and the DRC have also grown strongly.

Global Mined Production (Mct)					
Country	1999	2006	Change		
Russia	23.0	38.4	67%		
Botswana	20.0	34.2	71%		
Australia	29.8	29.9	0%		
DRC	18.0	28.9	61%		
South Africa	10.0	14.9	49%		
Canada	2.5	13.2	428%		
Angola	N/A	9.2	-		
Namibia	2.1	2.4	8%		
Others	6.6	7.1	14%		
Total	112	175.8	57%		

Source: Industry data, Kimberley Process, company reports, Ambrian

Supply growth from Canada is the result of commissioning of three major operating mines — Ekati (BHP Billiton), Diavik (Rio Tinto) and Jericho (Tahera Diamond Corp). Three more mines are in development — Snap Lake (full capacity in 2008) and Victor (De Beers), and Star (Shore Gold/Newmont).

Africa is still the largest source of rough diamonds

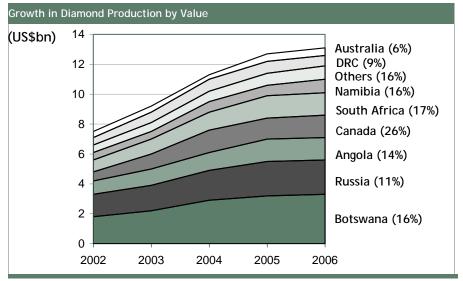
Namibia and Angola supply the highest average value diamonds

Strong supply growth from 2002-2006 is now slowing

Africa remains a key source of diamonds; by continent, it is by far the largest source of rough diamonds in the world, accounting for around 60% by value. Botswana and South Africa account for two-thirds of this, while emerging countries such as the DRC, CAR and Angola becoming contributors.

The highest average value diamonds come from Namibia and Angola, where marine and alluvial diamond mining are prevalent with their commonly greater proportion of larger diamonds. However, the Angolan, DRC, and Zimbabwe figures must be treated with caution on account of illegal digging and cross border smuggling. The same goes for Zimbabwe, with large numbers of illegal diamonds reported to be being exported.

Between 2002 and 2006 the supply of diamonds (by value) increased by an average of 20% annually. However, 2006 saw a slowdown in the production growth, with the total up only 3.1% compared with 2005. Canada, which receives some 50% of global diamond exploration expenditure, is one of the few plausible sources of new diamond production outside Africa. Almost 700 kimberlites have now been identified in the country.

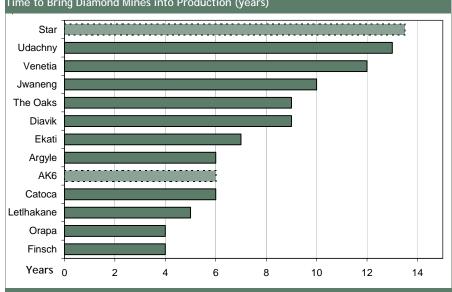


Source: De Beers

#### **Future Supply Growth**

Although the level of diamond exploration is at its highest for many years, planned production increases fall well short of projected demand. This is largely because the exploration, evaluation and development time for major hard-rock mines is rarely less than five years. In true frontier areas such as the Canadian Northwest Territories in the 1990s and much of Africa today, it commonly takes as much as ten years (Appendix 3 provides a simple timeline from exploration to production). With the current employment and assay lab pressures on the industry, we are seeing the timeframe grow ever longer. For large mines such as the Star Kimberlite in Canada, development may take up to 14 years (from first drilling). For medium-sized operations this timeframe is much lower; a 6-year timeframe is expected for AK6 in Botswana.

Long development timeframes means supply growth is likely to slow significantly



Time to Bring Diamond Mines into Production (years)

Dotted lines denote pre-production mines; Source: BHP Billiton, Ambrian

As a result, we believe the slowed rate of growth will be maintained, with supply growth of only around 1% annualised until 2016. The major anticipated changes, barring political upheavals, are shown in the table below; this list excludes South America, China and the Indian subcontinent. Further significant increases may come from Africa (especially Angola and the DRC) and Russia, but these are difficult countries to analyse because of the lack of transparency and clarity of political situations in Africa.

Potential Cha	Potential Changes in Mined Diamond Supply (Mct) 2005-10E				
Country	Mct pa + (-)	Mines	Ownership		
Angola	+10.0	Alluvial and kimberlite; improved access and political stability	Endiama, BHPB, De Beers, Leviev		
Canada	+2.5	Snap Lake, Victor, Jericho; Ekati to go underground	De Beers, Tahera, BHP Billiton		
Australia	(14.0)	Argyle, transition to underground mine, some Kimberley uplift	Rio Tinto, Gem Diamonds		
South Africa	(8.0)	Older, deep mines, closing	De Beers		
	+2.0	Various new mines opening	Crown Diamonds, Dwyka and others		
Russia	+10.0	Siberia, Archangel, Nyurba; opaque information	Alrosa and others		
Zimbabwe	+1.0	Murowa, Marenge alluvial	Rio Tinto, state		
DRC	+10.0	Various alluvial; uncertain production levels; elections in 2006	Various		
Sierra Leone	+1.0	Various alluvial	Mano River, Trans Hex		
Net Total	+14.5				

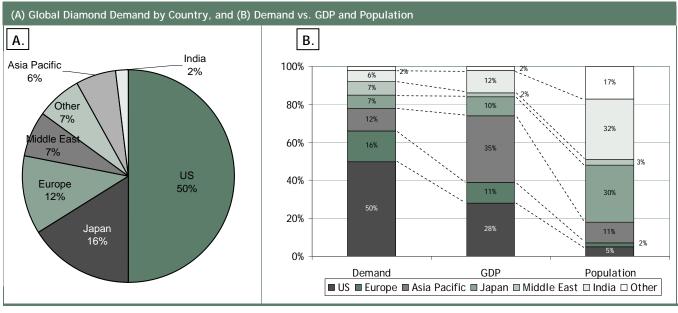
Source: Company data, Ambrian

The inventory of primary deposits pending development is short, while alluvial deposits abound. As such, we assume that alluvial deposits will be mined intensely to make up the shortfall, primarily in Africa. Whilst infrastructure and political instability remain key hurdles, the likes of Angola, Liberia, and Sierra Leone are rapidly making progress in these areas, a factor likely to support ramping up of production.

US retail accounts for half of world demand

#### Demand

The US remains the driver for diamond demand in overall terms, accounting for half of the world's gem diamond sales despite only representing 5% of the population and around a quarter of the GDP. In spite of the current downturn, global demand growth over the next five years is estimated at 3.0-3.3%. Much of this is expected to come from India and China, where growth is estimated to be as high as 7% annually as a result of their emerging middle classes and targeted marketing.



Source: Idex

Source: Idex

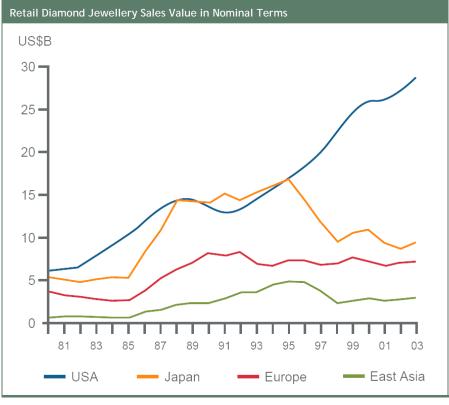
#### Historic Demand Growth

Rio Tinto estimates that diamond demand has increased at an inflation adjusted rate of 2.4% annually over the last 20 years, shown below.

Historical Global Diamond Demand (compound annual growth rates)				
	Nominal	Real		
1980-1990	8.2%*	3.5%		
1990-2000	2.4%	-0.5%		
2000-2005	3.9%	1.3%		
1984-2005	5.6%	2.4%		

\*The Yen's appreciation against the US\$ compounded the actual growth rate; Source: Rio Tinto Diamonds

Historically most growth in demand has come from the US, contrasting with the rise and fall of the Asian markets, notably Japan, South Korea and Thailand. After remarkable growth between 1980 and 1995 the region, led by Japan, suffered an economic collapse, with several countries seeing the value of their currencies decline.



Source: Rio Tinto

Future demand growth of 3.0-3.3% is currently forecast

Growth in Asian demand will be led by China and India

Chine only accounts for 4% of global demand

**Future Demand Growth** 

Demand growth for diamonds is estimated at between 3.0-3.3%, although BHP, perhaps unsurprisingly, suggests this could average 5.0% between 2007 and 2015. Recent history has shown that worldwide consumer demand for diamond jewellery can fall by up to 8% in one year and rise by 25% in four years. These are difficult shifts for an industry to handle, particularly one that is losing the paternal protection of its leading participant (De Beers).

Growth is largely forecast to come from increased demand in Asian markets, led (not surprisingly) by India and China, with demand from the US and Europe likely to be flat, influenced by slow economic growth and a lack of market penetration.

The unprecedented growth patterns of India and China may be sustained over the long term, but there are bound to be reversals. When they occur, consumer goods will fall early victims. Given recent US jobs figures, and the continued fall out from the credit crunch (now liquidity crisis), the coming year will be important in determining whether or not the diamond deficit predicted by many will actually eventuate.

China: Strong growth from a low base; currently just 4% of gem diamond demand. In Shanghai and Beijing some 80% of brides now receive a diamond ring (usually a solitaire in a claw setting). This is the same proportion as for the US, and yet the wedding ring is a new cultural phenomenon in China and diamonds have to replace more traditional jewellery in jade and gold. It has taken about five years for China to reach these levels.

With gold jewellery popular, India has great potential for diamond sales

The US market is mature, with sales proportional to GDP growth

The +2ct diamonds represent 7% of production by weight, but 44% by value

Most industrial diamonds are synthetic

We agree with producers that a supply deficit is likely, but potentially not of the magnitude forecast

Long development times are restricting new production coming on stream

**India:** India has a long culture of buying jewellery, particularly gold. Indians typically spend a larger amount of disposable income on jewellery than other nationalities, but the challenge for the diamond industry is to persuade the Indians to buy diamonds along with their gold.

US: Market penetration is mature in the US, so rapid growth is definitely off the cards. The increasing affluence of the middle class is, in our view, being counter-balanced by the recessionary pressures and slowing GDP growth. This should lead to a stagnant market with slow growth only.

**Europe:** Penetration into European markets has traditionally been low. This is currently being exacerbated by an ageing population and falling birth rates, which is forecast to lead to little growth.

#### Demand by Category

While the demand for diamonds overall may follow general economic activity, demand can shift significantly amongst different products. For example, with the growth of techniques for cutting smaller and smaller diamonds, markets have grown up over recent years for jewellery containing clusters of small diamonds in addition to the more traditional use of larger stones in engagement and eternity rings.

Importantly, large diamonds are becoming increasingly popular in the emerging ultra-wealthy markets. Fine gem diamonds of +2ct size comprise just 7% of production by weight, but represent 44% of the value.

#### Industrial Demand

Between 50-60% of diamonds produced are not of gem quality. The majority of these are used in industry. Diamonds are used for industrial purposes in cutting, grinding and polishing; not only diamonds, ceramics, metals and concrete, but also finely tooled items such as lenses and computer chips. Growing specialty uses include ultra-hard and smooth cutting knifes and scalpels for extremely precise surgery, specialty windows and heat.

However, 90% of the diamonds used in industry are synthetic (100 metric tonnes, or 500 million carats). The reason most industrial diamonds are synthetic is that large quantities of consistent quality can be produced and, in many cases, their properties can be tailored for specific applications.

#### Supply-Demand Balance

A supply deficit is driving rising prices. This is (somewhat predictably) the almost universal view of diamond mining companies and mining analysts retained by those companies. We are not so sure — with a looming recession in the US (50% of world demand), and demand forecasts compiled by mining companies or their retained consultants, a deficit isn't quite so clear cut for us. Constrained supply may be clear, but demand is a concern for us if investors are taking appreciating diamond prices as a given, and most fail to recognise the split between large and small diamond sizes.

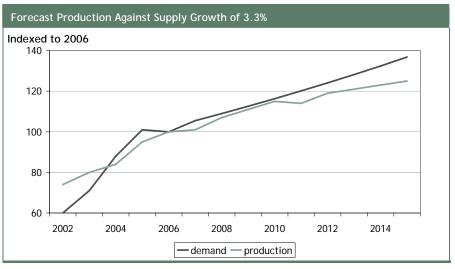
**Supply:** We believe supply will be limited, with long lead times for kimberlite mines and poor logistical and political support in emerging African countries restricting growth. Increasingly, the timeframe for mine development is extended by negotiations with host governments, satisfaction of environmental demands and extended delays in assay lab US economic slowdown will likely affect diamond prices in 2008

Supply growth of 3.3% will create a deficit at current prices

turnaround during bulk-sampling phases. The true development time is now commonly at least two years for alluvial, five years for an open-pit and seven years for an underground mine.

**Demand:** In our opinion the likes of BHPB, De Beers and Rio Tinto are underplaying the impact of the US economic slowdown on demand, or perhaps they are just being slow to react? However, on balance, strong demand from the Asian market and the super-wealthy may well offset this. A US slowdown should impact both large and small diamonds, as salary cuts from the financial sector impact the large stone market, while overall economic contraction hits the smaller diamond market. We believe strong Asian demand will be focused on small diamonds as wealth (by major volume) emerges from the bottom up, while increasing numbers of super-wealthy from Russia and the Middle East will be likely to support large diamond demand.

**Balance:** When looking at supply growth for the next 5-10 years, we estimate the breakeven annual demand growth will be 2.2% for a supply-demand balance at current prices. This means — given the 3.0-3.3% forecast demand growth — we believe a deficit at current prices is likely.



Source: Supply growth - Ambrian, demand growth - BHP Billiton

De Beers has a significant inventory, which it has been reducing since privatisation in 2001. Also, it is our view that alluvial projects in countries such as Angola, DRC, Sierra Leone and Brazil will provide a buffer for any rapidly escalating prices.

## **Diamond Prices**

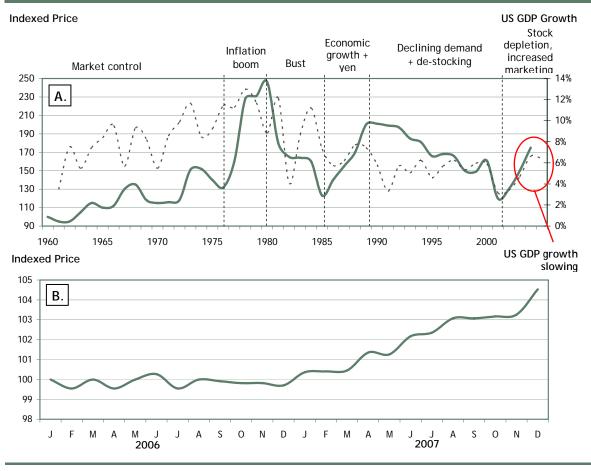
There is no such thing as a supply deficit, just a price at which the market is willing to buy. As such, the likely forecast deficits discussed above will most likely result in rising prices. In more detail, diamond pricing is clouded by issues of inventory, cutting, marketing, variances between diamond sizes and, most importantly, US wealth.

#### **Historic Price Growth**

Diamond prices are linked to US GDP growth, which is slowing

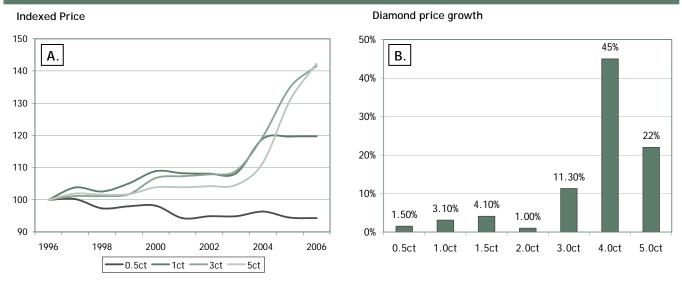
Historically diamond prices have been driven by economic (US GDP) growth leading to increased demand, but influenced by currency strength (strengthening yen) and market control of inventory. This has led to various movements over the last 20 years. The current trend is very much upward, with prices for polished stones up 4.8% YoY to December 2007. This is an understatement of rough stone price appreciation, as margins for cutters have been somewhat squeezed over the same period.





Source: (A) Rio Tinto, (B) IDEX

To understand fully price movements it is necessary to break down stones by size. Large +2ct diamonds comprise just 7% of production by weight, but represent 44% of the value. It is these diamonds that are appreciating, while 0.5ct stones are appreciating slower than inflation.



(A) Polished Diamond Prices by Diamond Size, and (B) Change in Diamond Price by Size for 12 months to Dec 2007

Source: (A) Rapaport, (B) Idex

Diamond price appreciation of 3.2% is forecast by WWW Diamonds International

Equity investors need to target big-stone mines (Lesotho kimberlites and alluvials)

Retail pressure demonstrates a lack of price elasticity in demand — in our view this will impede aggressive price growth This is also critical to equity analysis; production from alluvial operators is dominated by large diamonds (which survived the weathering environment), tailings re-treatment operations return mostly small stones (missed during historic production), while kimberlite mines can be either large stone (eg, Letseng/Gem Diamonds) or small-medium stones from most other kimberlites outside Lesotho.

#### **Future Price Growth**

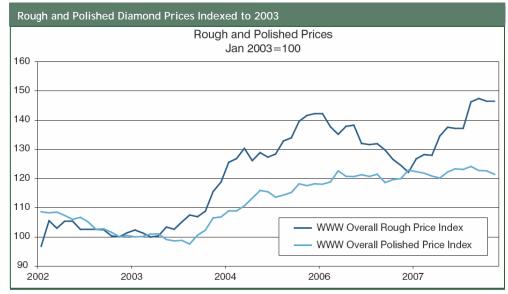
As we stated above, broadly we believe that the supply deficit will lead to price appreciation for larger diamonds. WWW Diamonds International forecasts rough diamond price appreciation of 3.2% over the next five years, and polished diamond price appreciation of 4.1%.

However, we are not convinced that smaller diamonds will appreciate in price, and we are already seeing stagnation of diamond prices in the smallest 0.5ct range. The main reason for this, in our view, is that the market doesn't have the price elasticity that producers would like (ie, if prices rise, demand drops away rapidly). Put simply, value-add businesses of polishing and retailing would put price rises through to consumers if they were able to. Instead, we are seeing falling margins in the cutting and polishing businesses and an increasing squeeze on retail jewellers.

The graph of rough vs. polished prices on the next page shows the squeeze on cutting margins as rough prices grow much faster than polished prices. While this is based on complex market interactions, we reiterate the key point that, at its simplest, it is an indication of the inability to pass through higher prices to customers.

Retailers' margins are being increasingly hit, not the least due to rising precious metal prices. The trend towards consolidation continues, with the smaller operators being forced out by mass retailing on TV shopping channels and the internet. These woes are typified by small US business Hoff Jewellers and Diamond Importers, who filed for Chapter 11 in January 2008 because of low sales and tight credit.

Also hard to judge, we are seeing the early stages of a slowdown in US GDP growth — if this develops into a recessionary environment, we would expect diamond price growth to be impeded, especially in the sub 1ct mass markets.



Source: WWW Diamond International

In Appendix 5 we outline several other key price drivers that we think will influence the market dynamics until at least 2010, including:

- changes in selling practices;
- downstream integration;
- beneficiation at source; and
- corporate governance and conflict diamonds.

Outside the supply and demand dynamic, we think synthetic diamonds will be the major driver of prices going forward.

#### Synthetic and Artificially-enhanced Diamonds

Most gemstones can be, and are routinely, commercially synthesised. Synthetic coloured gemstones are relatively easy to detect and are sold as artificial. Significant examples of this include the Signet Group of the UK and US which that markets 'Kimberley Created' rubies and Chatham of the US that has added other gemstones to its long-standing production of grown emerald crystals. However, diamond synthesis is more difficult.

Natural diamond results from the crystallisation of carbon under conditions of great heat and pressure deep in the Earth's crust, a process difficult to replicate in the laboratory. Unlike most other gemstones, diamond is a single element, so the resultant diamond is difficult to detect.

The first synthetic diamonds were manufactured in 1953, and this was followed by GE of America who produced dark industrial-quality diamonds in 1955. Nonetheless, these gained rapid acceptance in the industrial market, and led to a fall in the price of industrial diamonds from US\$20 to US\$3 per carat. More recently, three US players have emerged over the last few years.

Synthetic diamonds are going to be the main price driver in the medium term...

... as they are indistinguishable to the naked eye

#### **Synthetic Diamonds**

**Synthetic diamond** research is expensive and, as both natural and synthetic industrial diamonds are cheap, the innovators must be looking at the gem end of the market for their returns. The first reports of gem-quality synthetics came from Russia in the late 1990s. Combined with an apparently major increase in the volume of Russian exports, inevitable conclusions were drawn. Although these conclusions were never confirmed, synthetic gem quality diamonds were about to become a reality.

The major focus of attention is on three US companies: Gemesis of Florida and Chatham of San Francisco use a high temperature, high pressure process (HTHP), whilst Apollo of Boston uses carbon vapour deposition (CVD). In the HTHP process, diamond powder is mixed with a flux that enables the pressure required to be reduced to a sustainable level. Gemesis claims that the addition of trace elements in the solvent can produce diamonds in a range of colours. The CVD process introduces gases ( $Ch_4+H$ ) into a partial vacuum and the carbon is stripped from the gas to form the diamond around the starter crystal. Such is the rate of progress that the Carnegie Institute of Washington has claimed (in 2005) that it can make colourless gems using a variation of the CVD process. Not to be outdone, in April 2005, scientists at the University of Alabama announced a microwave-based technology that could lead to the mass production of stones. It is indicative that despite much publicity surrounding synthetics, no attempt has been made at mass marketing as yet.

In a further advance made in 2005, physicists in Germany created a material that is harder than a diamond crystal from what are referred to as aggregated diamond nanorods. Each nanorod is created by compressing ordinary carbon-60 molecules to 20 GPa (nearly 200,000x atmospheric pressure) while simultaneously heating to 2500 Kelvin. Although yet to be commercialised, there is the obvious potential for substitution in the most demanding industrial applications.

Artificial Enhancements are further clouding the picture. Most natural diamonds acceptable to the market are white or a shade of white. Naturally coloured diamonds (eg, Argyle pinks) are extremely rare and command a large price premium. Browns, which are common to many orebodies, are extremely difficult to market as gems but are being treated by Bellataire (Holland + US), and Sundance Diamonds in Utah treat yellow stones in a similar process. Irradiation is also being used by Sundance to give pink or pink-purple colours. New York-based Yehunda Diamond Co uses Clarity Enhancement methods to lessen the impact of inclusions in larger stones.

- Gemesis: Produced 550ct a month in 2002, now produces 'multiple thousands' per month, mainly 3ct size. Despite the ability to produce clear diamonds, they focus on fancy yellow stones.
- Apollo: Only produced hundreds of carats a year using newer technique. Diamonds are typically one-third to half carat range in size.
- Chatham: Claims it can build a press to produce 500cts per month, but cost is US\$1m and build time is 18 months.

The recent dearth of published information on synthetics may reflect the unease felt by the industry. Techniques of synthesis are rapidly improving and costs are falling. The manufacturers have asked for synthetics to be certificated, and GIA initiated this from January 2007. Indeed, a declaration of synthetics is almost inevitable and many would argue the only logical conclusion to enable consumers to make an informed choice.

However, the ramifications are huge. It will first only affect smaller diamonds, say up to 0.5 carats, but that is a majority of the total and already it is not worth paying the price of a certificate on natural smalls, so synthetics of sufficient quality could well begin to rank pari-passu.

The miners, particularly De Beers, are not ignoring the threat and have allocated large budgets to the development of detection devices. The commercial viability of this will rely on their being widely available, which implies that that the technology must be moderately portable and affordable to the retail trade.

GIA now certify synthetic diamonds

De Beers has countered with machines to detect synthetic diamonds

De Beers draws parallels with cubic zirconia, underplaying the fact that synthetic diamonds are indistinguishable to the naked eye

We think Gemesis' stated intent to IPO will create shockwaves — it is seeking 10% of the diamond market within five years **Opinion**: In our view, synthetic diamonds represent a genuine threat to the diamond price in the 5-10 year timeframe as they sell at a half to a third of the price. The question is what degree of substitution will take place — in our opinion, a lot. Where a purchaser could spend US\$5,000 on a 0.5ct engagement ring, it is logical that they would buy an indistinguishable (without specialist machinery) 1.0ct diamond for the same price. This will be balanced by the fact that artificial diamond producers may keep prices high, if only from the political pressures which no doubt will come to bear.

And what does De Beers think of this? Not much. De Beers' spokeswoman Lynette Gould is quoted saying "if synthetics do enter the jewellery market we believe that over time, production costs will fall, and synthetics will probably occupy a similar position in the market place to cubic zirconia..." Given that synthetics are indistinguishable to the naked eye, to think they would rank alongside cubic zirconia (a much lowervalue clear gemstone) is extremely optimistic.

Looking to the immediate future, Gemesis seems well placed to start making waves already. Emerging producers Apollo and Chatham are small and private, but we think an IPO or substation capital injection is all that it will take to catapult these two into the limelight.

Gemesis, which abandoned an IPO in 2006, appeared at events sponsored by Equity Capital Markets specialists in 2007, so we think that a cash injection (and probably an IPO) could be on the way sooner rather than later. This seems to be the line of the company also; in 2007, CEO Stephen Lux said "for us to grow to a hundreds-of-millions-type company will take a substantial influx of cash, such as a stock offer." In October 2007 the company put a plant into operation that may produce tens of thousands of diamonds a year using BARS, a press-free high-pressure splitsphere installation pioneered in Russia. The potential IPO, and surrounding publicity, is sure to cause shockwaves in the industry. Gemstones offer an alternative equity exposure to the luxury goods market

# **Coloured Gems**

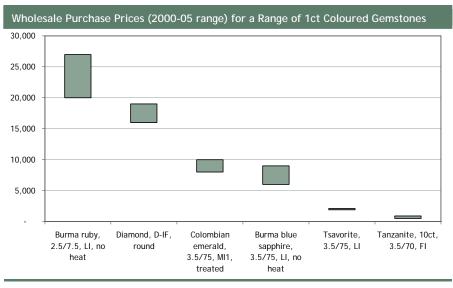
We believe investors seeking equity exposure to the luxury goods market would do well to invest in leveraged gemstone miners. With the emerging wealth of India and China driving small stone prices, and the increasing number of super-wealthy pushing up prices for large diamonds, we remain positive on the sector. Also, increasing use of technology is constantly improving recoveries, lowering costs and improving profits for the few commercial operators. The five gemstone miners listed, or potentially listing, on AIM are shown below.

Gemstone Companies L	isted (or Poter	itially Listing) on AIM			
Company	Ticker	Stone	Country	% world production*	Market Cap
Gemfields	GEM	Emerald	Tanzania	?	£37m
Noventa	NVTA	Morganite	Mozambique	?	£51m
Tanzanite One	TNZ	Tanzanite ± tsavorite	Tanzania	35%	£33m
Tsar Emeralds	Private	Emerald ± alexanderite	Russia	c.5% *	£50m
Van Dieman Mines	VDM	Sapphire	Australia	c. 10%*	£24m

\*Difficult to verify; Source: Ambrian

Lack of price transparency turns away many investors

Coloured gemstones are a poorly understood commodity, mainly because of the lack of equity exposure and low transparency of pricing mechanisms. Gems are mainly mined by alluvial and hard-rock artisinal miners in poorly developed gem fields in emerging Latin American, Eurasian and African countries. Emeralds are the most expensive gems, followed by sapphires, which jointly make up the majority of the precious stone market outside diamonds.



Source: 'The Guide', industry publication on gemstone prices

The hardness of gemstones is important, with softer gems less suitable for every day wear and generally less durable, while harder gems facilitate better cutting. Also, refractive index is important, as it can be used as a proxy measurement of 'brilliance'. Diamonds rule supreme in both instances, with a comparison of gemstones covered here shown below.

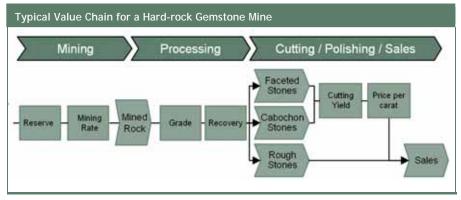
Comparative Metri	Comparative Metrics of Gemstones Mined by AIM-listed Miners					
Gemstone	Colour	Hardness	Refractive Index			
Diamond	Clear to yellow/brown	10.0	2.42			
Alexandrite	Blue-green / red-purple*	8.5	1.80			
Sapphire	Light to dark blue	9.0	1.77			
Tsavorite	Light to dark green	7.0-7.5	1.74			
Tanzanite	Purple to blue	6.5	1.70			
Emerald	Light to dark green	7.5-8.0	1.58			
Morganite	Clear to pink	7.5-8.0	1.58			

\*Changes colour in natural/incandescent light; Source: Industry reports, Ambrian

#### Value Chain

The value chain for precious gems is similar to that for diamonds, although grade is measured differently. For example, in hard-rock emerald mines resources are measured in Emerald Crystal in Rock, a g/t measurement. A recovery factor is then used to equate emerald in rock with emerald recovered, known variably at Treatment Recovery. Where a company sells cut stones, a further reduction occurs in the cutting process, known as the Faceting Yield. When cutting a gemstone, typically 65-75% of the weight of the rough stone is lost (ie, a yield of 35-25%). Yields of as little as 20% are not uncommon.

Stones are either sold rough (from mine), faceted (cut with flat faces) or cabochon ('cut' but in spherical shape with no actual faces).



#### Source: Ambrian

The attraction of western miners using modern methods is that large upgrades in recovery are available at all the above stages. X-ray detection can remove waste prior to mill processing, increasing apparent mill throughput, while treatment recovery can be improved with the use of automatic laser/light or x-ray machines, such as FlowSort technology, which replaces hand sorting.

#### Forward Integration

Acquiring the ability to cut stone in-house is a key value-add step for gemstone miners. Where cutting is bought in house, it is common for Faceting Yields to improve from the 10-20% range to the 20-30% level. As for diamonds, the cutting industry is a 'closed shop' for miners in many cases, who are forced to sell stones at rough prices without realising the often substantial price uplift on cutting, especially for large stones.

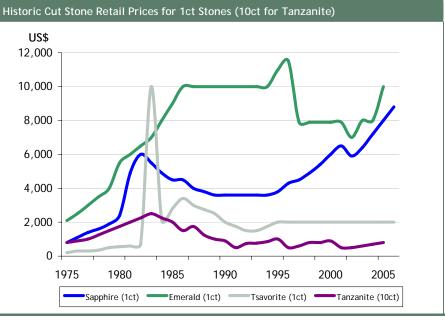
Processing is similar to that for diamonds

The multi-step value chain provides numerous opportunities for tech-savvy operators to improve margins Only private company Tsar Emeralds secured full forward integration into cutting, most AIMlisted gemstone companies use joint ventures

Market size is difficult to establish for gemstones, but we estimate it at US\$5bn for sapphires, emeralds and rubies None of the three AIM-listed gemstone miners have managed to secure 100% forward integration. Van Dieman Mines (AIM: VDM) has negotiated a 50/50 JV with US cutter and marketer Columbia Gemhouse, a similar strategy to Noventa (AIM: NVTA), who set up a 49/51 JV with US-listed jewellery manufacturer and distributor LJI. Gemfields (AIM: GEM) has stated its intent to forward integrate through acquisition of an Indian cutting business, although it currently sells rough stones only. TanzaniteOne<sup>3</sup> (AIM: TNZ) uses a method more common to the diamond industry, using a preferred supplier strategy under which 'sightholders' are authorised to purchase rough stones. Private company Tsar Emeralds used connections with the Israeli cutting industry to secure 100% forward integration, but is still finalising mining licences ahead of full commercial production.

While the market size of gemstones is difficult to determine, worldwide cut stone sales are estimated at around US\$2bn for sapphires and US\$2bn for emeralds, while the ruby industry is estimated at US\$1bn, although these values are very difficult to substantiate.

The authoritative price guide for gemstones is '*The Guide*', compiled expressly for trade buyers. Historic gemstone prices for 1ct stones (10ct for tanzanite) are shown below.



Source: 'The Guide'

#### Emeralds

Opportunities exist for modern operators to exploit emeralds commercially **Emerald** mining is dominated by artisinal operators, with few mining operations run on commercial scales to western standards. Stand out operators in this space are Tsar Emeralds (private, Russia) and Gemfields (AIM: GEM, Tanzania). Both underground and alluvial operations are common.

The majority of world production comes from Brazil (45%), followed by Colombia (30%) and Zambia (15%), with a small amount of production

<sup>&</sup>lt;sup>3</sup> Ambrian acts as broker to this company

Emeralds are the third highest priced gemstone after rubies and diamonds

Sapphires are rarely exploited commercially

Like diamonds, sapphire prices have experienced recent strong growth

Alexandrite is an accessory gem at the Tsar Emeralds emerald mine in Russia from Russia and Afghanistan. Although difficult to estimate, we believe global production is around 30m carats a year.

**Prices**, similar to diamonds, are difficult to quantify as each stone varies, but emeralds command higher prices than other gemstones (except some rubies). Value is based on a combination of:

- Size: larger stones have higher prices
- Clarity: 'Sort I' are the best stones, 'Sort III' the lowest quality
- Colour depth: Dark stones are best, from '1', the best, to '3'

Emerald prices collapsed in the early 1990s after issues around treatment of stones. Treatment, commonly by heat or polymer to remove discolouration, is common in the industry, but treated stones must be disclosed as such. Prices have since recovered, and have shown a steady increase over the last few years. This has been driven, in part, by the Colombian peso, which strengthened by some 10% against the US dollar in 2007, although it has weakened again recently.

#### Sapphire

Sapphire mining occurs in both hard-rock mines and alluvial deposits, where the heavy erosion-resistant stones accumulate in stream beds. The two most important sources are Sri Lanka and Madagascar. The former has historically been the most prolific supplier of the best quality stones, with 'Sri Lankan Blue' or 'Ceylon' being the benchmark blue colour for all sapphires. Tanzania, Thailand, Australia and the US also produce sapphire. Most sapphires are mined on a small scale, often by artisinal workers. Van Dieman Mines is one of the only commercial miners of sapphire, with favourable economics based on the co-incidence of alluvial tin ore (cassiterite) alongside sapphire.

With emerging countries often criticised for poor working conditions, there has been recent support for 'fair-trade' sapphire, with associated branding programmes intended to raise prices.

**Prices** are difficult to quantify, but based on a 'standard' stone, there has been strong price appreciation since 1995. Within the last two years, increasing demand from growing luxury markets lifted prices.

In 2H07 it was reported that requirements to license irradiated stones would prevent sales of blue gemstone topaz, and support sapphire prices. This 'ban' appears to have not materialised, and several major US retailers have now achieved distribution licences from the US Nuclear Regulatory Commission.

#### Other Gemstones

Niche gemstones mined by the AIM-listed miners are listed below. Tanzanite is the best example of one of these stones, and presents clear evidence that if a commercial supply can be generated a market can be built up around the supply.

Alexanderite is named after Tsar Alexander II after discoveries in the Urals. No commercial supply of the stone exists, but it is a significant subsidiary to emeralds in Tsar Emeralds-producing mine in Russia.

The stone has a unique property that makes it appear blue-green in natural light, but purple-red in artificial light. Another niche mineral,

Morganite is produced by AIMlisted Noventa

Tanzanite is mined by TanzaniteOne

A tsavorite deposit in Tanzania may be developed by TanzaniteOne distribution may prove difficult, but if produced in commercial quantities high prices should more than make up for this.

Morganite is a pink variety of beryl (similar chemical composition to emerald). Not as hard or brilliant (refractive index of 1.58) as its peers, morganite is typically clear to soft pink depending on impurities. The market is very much niche, where it is sometimes sold as 'pink emerald'.

Tanzanite was first discovered in Tanzania in the late 1960s. Tiffany & Co adopted the stone and pioneered a marketing campaign, primarily in the US. With the majority of the world's supply of tanzanite coming from Tanzania, TanzaniteOne operates the only commercial mine, producing some 35% of global supply.

The soft nature of tanzanite means stones are best used in necklaces and earrings rather than rings. Following a hard push by marketing divisions, demand for Tanzanite is now substantial, mostly from US-led retailers, with substantial demand from television and internet sales channels.

Tsavorite is a hard, green gemstone which is a member of the garnet family. The stone was first discovered in the 1960s and 1970s in Kenya and Tanzania. Named by Tiffany & Co, stones have a high 'brilliance' because of their refractive index and nearly clear colouration. Its hardness means it commonly doesn't require treatment once polished, and is suitable for rings as well as other jewellery.

The market for the stones is niche, but pricing is reportedly two to four times tanzanite on a like-for-like basis. TanzaniteOne's proposed orebodies comprise transported gravels, which can be open-pit mined.



Source: Industry data

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Selected Diamond and Gemstone Companies on AIM

30 January 2008

# African Diamonds

# Price: 80.5p

#### Upcoming Events:

Bots. Gov share AK6 decision (2008) AK8 bulk-sample results (1008) Boteti Technical Review (1008) Financial year end (June 2008)

Market cap	£61.3m
Ticker	AFD LN
Price Target (p)	n/a
EV / in-situ value	27.9%
EV / 08E revenue	n/a
Cash in hand (£m)	3.5
52 week (p)	
High	100.1
Low	80.5
3M-avg. daily vol. (000s)	76.2
3M-avg. daily val. (£000)	79.1
Shares	
Basic	76.2m
Fully diluted	79.1m
Top shareholders	
JP Morgan	9.9%
De Beers	5.8%
Black Rock	5.7%
WB nominees	5.5%
Total	26.9%



Source: Fidessa

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Main Assets						
Project	Ct (m)	Grade (cpht)	US\$/ct	US\$/t	Interest	Stage
AK6, Botswana	11.1	22	131	28.8	28.38%	Development
AK8, Botswana	-	-	-	-	70%*	Exploration
Boteti JV, Botswana	-	-	-	-	30%	Exploration
West Africa Diamonds, AIM	-	-	-	-	12.5%	Expl'n + Dev.
Bugeco - DRC	-	-	-	-	35.4%	Exploration

\*Assuming African Diamonds operate; Source: Company data, JORC/43-101 resources only

## **Company Description**

Focus and Strategy: African Diamonds is focused on bringing its 28.4%owned AK6 project into production by late-2009. The pipe is the most advanced of a suite of kimberlite evaluation projects being undertaken in JV with De Beers in Botswana. So far over 500 holes and 50km of drilling have been completed within the JV.

After the spin-out of West African assets in 2007 into AIM-listed West African Diamonds, management is now focused on Botswana. However, connections are still maintained with both the DRC and West Africa through minority interests in exploration ventures in those countries.

AK6 is progressing towards production, which is currently scheduled for 4Q09. The indicated resource is 11.1Mcts at an average grade of 22cpht and value of US\$131/ct, although this will likely increase marginally in grade, but significantly in carat value as drilling continues post mining license application. In addition to evaluation of known kimberlite pipes in Botswana, African Diamonds has a large 100%-owned landholding on which it is carrying out grassroots exploration.

African Diamonds' share price fell from around £1.10 to 70p in 4Q07 as development continued. At this time Firestone Diamonds sold its 7.3% for  $\pounds$ 4.9m, although this was in a single trade.

Management: African Diamonds owes much of its success to the dynamic influence of Executive Chairman John Teeling. John has over 30 years' experience, and an MBA from Wharton and PhD in Business Administration from Harvard. He is founder and chairman of Pan Andean Resources, Petrel Resources and Persian Gold, and a former director of Kenmare Resources and Arcon. Managing Director James Campbell adds operational strength, having worked for De Beers for over 20 years, cumulating as General Manager responsible for resource delivery in the global mining and exploration group. James has experience in both geology and management, having worked on small-scale mine development and was the personal assistant to Nicky Oppenheimer.

#### **Project Summary**

Project	Equity	Comment
		DEVELOPMENT
AK6 - Botswana	28.38%	JV with De Beers to bring kimberlite into production by 4Q09
		EXPLORATION
AK8 - Botswana	70%	Advanced evaluation kimberlite, bulk-sample results pending
Boteti JV	30-70%	Evaluation of numerous kimberlites, including six at mini bulk-sampling stage
Botswana exploration	100%	Large landholding of non-JV land on which grass roots exploration underway
		OTHER
W. Af. Diamonds - Sierra Leone, Guinea	12.5%	Alluvial and tailings projects to fund kimberlite exploration, AIM listed
Bugeco - DRC	35.4%	Private company in DRC exploring for kimberlites in JV with De Beers

Source: Company reports

**Boteti JV (30-70%)** is an exploration JV over 3,966km<sup>2</sup> in three main areas: Orapa (1,320km<sup>2</sup> around the mine), Serowe (2,482km<sup>2</sup>) and Shashe (163km<sup>2</sup>) in eastern Botswana. De Beers funds exploration until BFS, after which each company pays its own way. Under the agreement African Diamonds will operate, and receive 70% of gross profit, from mines with <US\$70m annual revenue. AK6 is an example of an asset with over US\$70m revenue, whereas AK8, if economic, could be operated by African Diamonds given the lower grades. All diamond sales from any mines must be through the Diamond Trading Company.

Key assets are AK6 (proceeding to mine), AK8 (bulk-sampling), four kimberlites at mini bulk-sampling stage (BK3, BK6, BK7, AK9), and 15 kimberlite pipes undergoing reassessment. Through the course of 2007 two kimberlites returned disappointing bulk-sample results — AK10 and BK13.

From a grassroot perspective, De Beers is involved in active exploration on the licences, with a new geophysical technique (SQUID) being used to look for kimberlites to the north of Orapa, where deep sands have previously slowed exploration. However, most of the focus on the licences is on evaluation of known kimberlites.

**AK6 (28.4%)** is the flagship project for African Diamonds. Re-sampling and re-interpretation of the geometry led to significant grade and size increases, and it is now in the process of development in a joint venture with De Beers.

A mining lease application was submitted in 3Q07, and is expected to be granted in 1Q08. The mine will operate at a phased rate of 2.7Mtpa from 4Q09, ramping up to 4.2Mtpa in 2011-12 with additional capital requirements. Capital for the first phase is estimated at US\$220m including contingency, while operating costs should be around US\$8/t. With a BFS completed in late-2007, the company expects to be in production in 4Q09.

African Diamonds is required to contribute capital on a pro-rata basis, with 75% to come from project finance and 25% from debt, provided by De Beers at Libor +3%. The Botswana Government has the right to take up as much as 50% of the project, although it is unclear at this stage if this will occur, with 0-20% a likely range of equity share.

A key figure for the AK6 project is the resource size. The current resource is estimated at 51.8Mt with an average value of US\$131/ct and grade of

22cpht. However, high-value and difficult to detect (non-fluorescent) 'Type II' diamonds have been identified in the pipe, and it is thought that the grade could be as high as 30cpht with values up to US\$200/ct. The current resource size is for kimberlite to 400m depth, although this is likely to increase with internal estimates of 22.3Mt between 400-756m depth.

Of note, the mining licence application contains economic models, so in effect African Diamonds is in a moratorium period where it cannot publish major changes to resources, grades, values, etc.

AK8 (70%) is 10km from AK6, and is a 5ha pipe currently undergoing resource estimation. The pipe contains a modelled 15Mt to 300m depth, with an average grade of 4-9cpht and diamonds priced at US\$60/ct. Three LDD holes were drilled in 2007, with resulted expected in 1Q08.

Kedia (100%) comprises licences over 1,984km<sup>2</sup> 120km west of Orapa, granted to African Diamonds in late-2007. The area contains diamond indicator minerals which are interpreted to be unrelated to both the Gope and Orapa fields, but no primary source has ever been identified.

**Mmashoro** (100%) covers an area of 981km<sup>2</sup>, although 53% of this is in the process of being relinquished. Sands up to 40m deep cover much of the area, hampering exploration. Exploration is ongoing after 2007 drilling of geophysical targets intersected dolerite not kimberlite.

**Bugeco (35.4%)** is a private Belgian company targeting diamonds in DRC. Management is credited with the discovery of the Morila gold deposit in Mali, and has ties with Anglo American. De Beers has a 70% option over around 9,000km<sup>2</sup> of licences, and carries out all exploration. Ten kimberlites have been discovered in two clusters over the last four years. Geophysics is now complete, and the 2008 focus is on ground sampling and discovery drilling.

West African Diamonds (12.5%) was spun out of African Diamonds in 2007. The company is a junior (£10m market cap) with a suite of alluvial and tailings gold-diamond near-production projects and development projects funding kimberlite and alluvial diamond exploration. Assets are in Sierra Leone and Guinea.

Resource and Re	eserve - AK6 pro	oject			
Category	Tonnes (Mt)	Grade (Cpht)	Carats (m)	US\$/ct	US\$/t
Indicated	51.8	22	11.1	131	28.8
Total	51.8	22	11.1	131	28.8

Source: Company reports, December 2007

#### Opinion

African Diamonds has many similarities with Firestone Diamonds in terms of holding a portfolio of kimberlite pipes in Botswana. The clear advantage is the now-proven economic viability of AK6. Once in production, this mine should transform African Diamonds from a tightbudgeted exploration company to a well-funded miner able to carry out aggressive exploration.

Despite the apparent success of AK6, there are two key unanswered questions in its development — the share of the project that the Botswana Government intends to take, and the final grade and carat

value. While management is hoping for higher grades and carat value through recovery of Type II diamonds and thorough bulk-sampling, the most recent round of bulk-sampling doesn't support this (mid-2007). As such, more work is now required to clarify the likely production metrics of the operation. As to the Botswana Government's share, experts we've spoken to put forward cases in both directions, ie, of course the government will take 50%, it's what the law was designed for, or alternatively, no the government won't take 50% in order to encourage further exploration, as exemplified by the (much smaller) Lerala mine being commissioned by Diamonex (ASX/AIM DON).

Importantly for investors, once the mining licence negotiations are completed, African Diamonds will be free to publish resources upgrades, which we expect it will.

Our DCF calculation for AK6 values the asset at 70-120p on an undiluted basis depending if grade lifts above the current 22cpht and the diamond value lifts above US\$130/ct. However, should the Botswana Government take up its option for a 50% share, this obviously falls, although this will be offset by the purchase price.

#### **Investment Case and Recommendation**

**Investment Case:** Any investment in AK6 will ultimately be based on the hope that (a) the resource size, grade and value increases at AK6, (b) the Botswana government doesn't take up its share in AK6 thus diluting De Beers and African Diamonds, and, of course (c) exploration success.

In the medium term, potential investors are looking at, as is usual for diamond companies, a high-risk, high-reward proposition for diamond exploration. With active and advanced sampling on four remaining kimberlites (two dropped in 2007 following disappointing results), near-term upside is focused on the Boteti JV. In 2010, once AK6 is in full swing, we would expect a multiple of NPV to be ascribed to the project, which should offer some uplift.

The company is certainly keeping its finger on the pulse of other African countries, with minority interests in various ventures, but has yet to put its cards on the table with a full equity share of any of these.

**Recommendation:** This is a well managed company with at least one world-class asset. Relative to the market, African Diamonds is highly rated and we believe the price fully reflects this. We value the AK6 project in the 80-120p price range, leaving the best-case near-term upside ranging from a worrying 15% (if Botswana government buys in) to 70% share in kimberlite exploration JVs with De Beers.

In our view, we think the share price will lift in reaction to resource estimates released after the mining licence is granted, making this an attractive investment over a six-month horizon. Beyond this, we would hold off on an investment until positive bulk-sampling results are returned from Botswana (not mini bulk-sampling), the company steps up exploration on its 100%-owned tenements in Botswana, or makes a play outside Botswana.

# 30 January 2008

# DiamondCorp

# Price: 93.5p

Main Assets						
Project	Ct (m)	Grade (cpht)	US\$/ct	US\$/t	Interest	Stage
Lace Mine - South Africa	14.1	37.4	119*	39.8	74%	Mining+Devl't

\*Estimate, based on valuing kimberlite at 2x tailings stones value; Source: Company data

#### **Company Description**

**Focus and Strategy:** DiamondCorp is focused on becoming a mid-tier South African diamond producer — its stated expertise is building and operating mines, with exploration only undertaken in the near-mine area.

The company's main asset is the Lace diamond mine, a historically mined kimberlite pipe with a significant resource remaining below the now flooded open pit and shallow underground. The resource of 14Mcts is contained in primary kimberlite and tailings. Phase 1 at Lace was commissioned in mid-2007, and it is producing diamonds from the 3.6Mt tailings resource. Phase 2 will target the underground kimberlite resource at Lace, and is expected to be commissioned in 2008.

The company listed on AIM in 2006, raising £2.0m at 90p for a post-listing capitalisation of £30.6m. Like many developers with more than a year to full production, the share price then drifted down, but when management hit production targets in mid-2007 — as it commissioned the processing plant — the share price responded with a 15% rise.

In mid-2007 a now-aborted attempt to acquire Sonop Mining for US\$45m and 7.5m shares led to suspension of the shares as this was considered a reverse takeover. The share recommenced trading in October 2007, and a dual-listing on the JSE is planned in 2008 with a small IPO to support Lace Phase 2.

The bugbear for DiamondCorp is diamond value. Diamonds from a small 1,300ct parcel were valued in 2005 at US\$69/ct. Using a rule of thumb, WWW Diamond International suggests US\$125/ct as a conservative estimate for the value of diamonds in the kimberlite. However, the first tailings parcel of 5,412ct sold for an average of US\$48/ct, although the value of run-of-mine stones could be higher as the parcel had gem and non-gem stones. On the upside, there was a high proportion of near colourless stones, along with fancy yellows and pinks.

Management: CEO Paul Loudon has over 20 years' experience in the City as a stockbroker and corporate financier and managing junior mining and exploration companies. He was previously president of Battlefield Mineral Corporation of Toronto, and non-executive chairman of alluvial diamond miner BDI Mining Corp. CFO John Forrest is a chartered accountant whom acts as FD for several public companies, including AIM-listed Central China Goldfields. Non-executive director Euan Worthington has extensive experience at board level and also in the finance industry.

Upcoming Events: Full year results (March 08) JSE listing (1Q08) Underground production (3Q08) Tailings diamond valuations (ongoing) Kimberlite diamond valuation (1Q09)

Market cap	£32.5m
Ticker	DCP LN
EV / in-situ value EV / 08E revenue Cash in hand (£m)	4.8% 45.8x 2.7
	2.7
52 week (p) High Low	103 83.5
3M-avg. daily vol. (000s) 3M-avg. daily val. (£000)	2.4 1.0
Shares Basic Fully diluted	34.8m 52.7m
Top shareholders MLP Investments JP Morgan Activa Diversified Holdings Henderson Global Total	16.8% 10.1% 9.9% 4.2% 40.8%



Analyst

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Proi	ect	Summary	
	~ ~ ~		

Project	Equity	Comment
		PRODUCING
Lace diamond mine	74%	Currently producing from tailings, underground development underway to mine kimberlite. 2008E production of 180,000ct, ramping up to 400,000 by 2011

Source: Company data

Lace (74%) is located 200km from Johannesburg in the Free State province of South Africa. The deposit comprises a main pipe (2.5ha) and a smaller satellite kimberlite pipe. In the 30 years of operation the main pipe was open-pit mined to 100m, and partially mined underground to 240m. It is estimated that a total of 4.5Mt of kimberlite was mined at an average grade of 16cpht. In 1995 a change of law meant that De Beers sold the then flooded mine, which was subsequently resold to DiamondCorp.

Tailings host some 370,000cts at a grade of 9.7cpht and value of US\$63/ct (US\$7.11/t). The primary kimberlite has a near-surface lower-grade zone with 1.8Mcts at 27cpht at US\$125/ct (US\$35/t); this formed the basis of historic workings, but is a non-SAMREC resource. Deeper in the pipe, higher-grade kimberlite dominates — the intermediate and deep resource contains 12.4Mct at 38-50cpht and values of US\$125/ct (US\$62.8/t) estimated from statistical analysis of tailings. These resources are considered sufficient for a 20-year mine life.

Targeted operating costs are less than US\$2.50/t for tailings; a 65% operating margin. This rises to around US\$17/ct for underground mining, which implies a 50% margin in the upper kimberlite, increasing to 70%+ in the higher-grade deeper kimberlite.

The plant can process 4,000-5,000tpd (1.45-1.82Mtpy), and was constructed for US\$12m. Target production rates during tailings recovery are 144,000ctpa. To date, 70% of the diamonds are high quality, with 14ct and 18ct stones recovered.

The key to profitability is to access the kimberlite pipe as soon as possible. To this end, in January 2008 the company started sinking a 100m deep 4x4m decline shaft to intersect the satellite pipe beneath the older workings. The decline will be developed to the 300m level, where a dewatering operation will be required ahead of full-scale underground mining. The existing vertical shaft (to 360m level) will be simultaneously refurbished, and then used as the main haulage shaft. Mining of the satellite pipe will commence in 3Q08 at 1,000tpd.

Resource and Reserve - Lace Mine								
Category	Tonnes (Mt)	Grade (Cpht)	Carats (m)	US\$/ct	US\$/t			
Estimated 240m-345m	6.57	27.7	1.82	125	19.11			
Inferred 345m-600m	14.26	38.0	5.42	125	47.50			
Inferred 600m-855m	12.88	50.3	6.48	125	62.88			
Tailings measured	2.85	10.7	0.30	69	7.38			
Tailing indicated	0.74	8.7	0.06	69	6.00			
Tailings inferred	0.39	4.3	0.02	69	2.97			
Total	37.7	37.4	14.1	119	40.9			

Source: Company reports. Kimberlite diamond value only an estimate derived from tailings

In 2009, once tailings re-treatment is complete, the company intends to ramp up underground production from 1,000tpd to 4,000tpd using sublevel caving, with a two-year US\$14m capex requirement for development.

**Exploration** is focused only on the Lace licences (12.4km<sup>2</sup>). Three small diamondiferous kimberlites have been identified on these, and geophysics has highlighted additional kimberlite targets. The company has stated that it will only spend a small amount of cash on exploration, and to this end will be drilling kimberlite targets in 2008 with the goal of finding additional open-pit material.

#### Opinion

Based on the metrics presented by the company, we think the Lace diamond mine is an excellent asset, providing a long-life cashflow for DiamondCorp. The plans outlined seem logical and well thought out, but, like any project being managed by a junior company, there is a certain element of risk in commissioning. However, to date management has met targets so we see no reason for this to hold the company back.

The biggest issue for Lace is the value of diamonds. Only a small parcel of stones was available from tailings prior to ramping up the operation, with the grade of US\$69/ct calculated from 1,300cts only. Consultants WWW Diamonds International indicated that stones from the kimberlite would likely be 2x this value, so the company has modelled a conservative 1.8x US\$125/ct for underground stones.

Management indicated that the first stones from the tailings operation were above expectation regarding colour, with the majority being E-F colour, and rarely less than G. Fancy stones are common, mainly yellow and pink. The key number, the value per carat, was US\$48.2/ct, but this rises to US\$64/ct for gem-quality diamonds. While this was only a small parcel, it looks like the tailings are certainly performing to expectations, a positive indication for the underground.

A side issue is grade of 7.7cpht, which is beneath the targeted 10cpht. However, we expect this to rise to easily 10cpht once a +6mm (6mm-28mm fragments) re-crush is re-commissioned after recent down time.

#### Investment Case and Recommendation

**Investment Case**: We have prepared a post-tax 12-month forward NPV<sub>10%</sub> for the project under a variety of scenarios because the value of diamonds from the underground has not yet been confirmed by bulk-sampling. As expected, there is a large range: from £39m if diamond values are in line with the first tailings parcel, up to £136m if the US\$69/ct target value is achieved for tailings and kimberlite stones are 2.5x this (the upper range of the 2-2.5x rule of thumb used in industry).

NPV for the Lace Mine Under Various Scenarios		
Scenario inputs	Input basis	NPV
US\$48/ct tailings, US\$87/ct kimberlite	First tailings parcel value, kimberlite 1.8x this	£39m
US\$69/ct tailings, US\$125/ct kimberlite	Company estimates	£57m
US\$69/ct tailings, US\$125/ct kimberlite, 2.5% diamond price appreciation	Supply deficit at current prices	£84m
US\$69/ct tailings, US\$172.5/ct kimberlite, 2.5% diamond price appreciation	Kimberlite value 2.5x tailings value	£136m

Source: Ambrian estimates

Looking at the above scenarios, what is immediately obvious is that the company is now trading at 25% below the NPV of the project in a 'worst-case' scenario. Should these values increase, which is technically possible but impossible to predict, we would expect uplift of as much as 100% in the share price, and maybe more if diamond values exceed expectations.

While impossible to guess at the value of diamonds from the kimberlite, we do note that the company has taken a conservative approach to date, such that there could be significant uplift. The risk applies both ways though; it is entirely possible that the mine could under deliver, resulting in a significant loss of value or even making this a loss-making operation.

#### Recommendation

We believe there is a potential gain of at least 33% from the current share price if valuing the company on a 1x NPV basis. However, despite the fact that the company is trading at under our base-case NPV, we expect the share price to stay in its current range through the year as there will be no new information on the kimberlite-hosted diamond values. In fact, if management misses production targets, or investors lose interest, the price could drift down.

The share price may rise moderately if the value of stones from the tailings lifts back up to the US\$70/ct range, or could rise dramatically should this lift even further to US\$100/ct, although we think this unlikely given that this is a tailings treatment operation.

However, if the estimated US\$125/ct can be achieved, we would expect uplift to at least NPV value of around £60m. As such, if the market cap remains at around £30m, we would recommend an investment in late-2008 ahead of first underground ore production. First ore from the satellite pipe is scheduled for mining in 3Q08, followed by a phased increase in production rates. Diamonds mined in 3Q08 probably won't be sold in bulk until at least 4Q08, and reported at the earliest in 1Q09.

Beyond Lace, we see potential for upside in bolt-on acquisitions. In late-2007 the acquisition of Sonop was halted (although we didn't view the Sonop operations as particularly impressive). Importantly though, this move indicated that management has a real appetite for acquisitions. In late-2007 CEO Paul Loudon indicated that the company is currently evaluating a number of projects that are close to, or already in, production in South Africa, so it will be a matter of wait and see.

30 January 2008

# **Firestone Diamonds**

## Price: 106p

#### Upcoming Events:

BK11 mini bulk-sampling (1008) Tsabong mini bulk-sampling (2008) Orapa / Jwaneng drilling (2008) Financial year end (Jun '08)

Market cap	£59.1m
Ticker	FDI LN
EV / in-situ value	-
EV / 08E revenue	16.9x
Est. cash in hand (£m)	5.0
52 week (p)	
High	165
Low	93
3M-avg. daily vol. (000s)	65.9
3M-avg. daily val. (£000)	112.0
Shares	
Basic	55.8m
Fully diluted	66.0m
Top shareholders	
Axa Framlington	10.4%
Gartmore	9.3%
JP Morgan	5.5%
Artemis	5.6%
Total	30.8%



Source: Fidessa

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Main Assets						
Project	Ct (m)	Grade (cpht)	US\$/ct	US\$/t	Interest	Stage
Bonte Koe - South Africa	-	-	-	-	Toll	Mining
Tsabong - Botswana	-	-	-	-	100%	Evaluation
BK11 - Botswana	-	-	-	-	80%	Evaluation
Orapa/Jwaneng - Botswana	-	-	-	-	39%-100%	Exploration

Source: Company data

#### **Company Description**

Focus and Strategy: Firestone Diamonds' value lies predominantly in its suite of kimberlite exploration projects in Botswana. Firestone's aim is to define an economic kimberlite from the 92 identified kimberlites on its landholdings, and to this end the company has recently stated its intent to sell or joint venture three of its four South African alluvial operations, retaining only a low-risk toll treatment JV with De Beers.

In Botswana, key projects include exploration licences over the Tsabong kimberlite field (13 kimberlites discovered in past 18 months, 83 in the field), the BK11 kimberlite in the Orapa field, and JVs around both the Orapa and Jwaneng kimberlite mines with De Beers.

At Tsabong the company is undertaking evaluation of existing diamondiferous kimberlites to determine if they are economic, and exploration for new kimberlites. High-priority pipes have been selected for evaluation, including the 180ha MK1 pipe, one of the largest in the world. The economics of BK11 are being evaluated through ongoing bulk-sampling and drilling. The Orapa and Jwaneng JVs both allow De Beers to earn in up to 61% on 4,900km<sup>2</sup> and 3,700km<sup>2</sup> of licences, respectively, and Firestone also has large areas of 100%-owned exploration licences.

The company raised £10m in equity in November 2005, expects £2m profit annually from its South African operations, and realised a £2m profit from the sale of its 7.3% stake in African Diamonds in 4Q07. This supports exploration, and with around £5.0m in cash there is no requirement for fundraising ahead of the planned bulk-sampling programme.

Management: Management is led by CEO Philip Kenny, an engineer with 25 years' experience in the mining and oil and gas sectors, including over 12 years' diamond experience. In December 2005 the board was strengthened by the appointment of COO Tim Wilkes. Tim's experience includes leading the De Beers mineral resources management team worldwide, and he was the Competent Person responsible for the evaluation, classification and reporting of De Beers' mineral resources and reserves globally.

Project	Equity	Comment
		PRODUCING
Bonte Koe - South Africa	75%	Toll treatment plant; Firestone treats De Beers' diamond gravels on profit sharing agreement. Will move to mining own resource on De Beers depletion
		EXPLORATION
BK11 - Botswana	80%	Large kimberlite pipe dropped by De Beers in 2006, sub-economic from historic sampling but reinterpretation supports potential for higher grades
Tsabong - Botswana	100%	Kimberlite field, drilled in 2007, mini bulk-sampling in 2008
Orapa/Jwaneng licences- Botswana	100%/39%	Exploration JV with De Beers as well as 100%-owned licences
	C	THER - ASSETS FOR SALE OF JV
Avontuur - South Africa	100%	Alluvial mine currently in Namaqualand
Oena - South Africa	87.5%	Alluvial mine currently on the lower Orange River
Groen River Valley - South Africa	100%	Alluvial exploration projects

#### **Project Summary**

Source: Company reports

**BK11 (80%)** is a kimberlite 20km from Orapa, and 5km from African Diamonds' AK6 pipe. The location is important, as 10% of kimberlites discovered to date in the field are economic, compared with some 1% of kimberlites globally. De Beers discovered the pipe in 1974, but considered it sub-economic with grades of 16cpht in 1994 and 2cpht in 2005. At the time De Beers was seeing suppressed diamond prices and oversupply from Russia and Angola, but this grade is likely to be economic currently.

After lapsing in 2006, the BK11 licence was awarded to Firestone in March 2007 in a competitive tender. Firestone management suggests there may have been only 70% recovery from the 16cpht bulk-sample (inferring grade of 22cpht), while the 2cpht bulk-sample was potentially from a minor low-grade zone, as interpreted from recent geophysics. Based on a combined inferred grade of 18cpht, and estimated size of 62Mt to 500m depth, the company is targeting a 4.5Mtpa operation over 15 years. With diamonds worth US\$150/ct, this would give US\$27/t revenue against US\$8-10/t mining costs in Botswana.

To date, the interpreted size has increased from 6.5ha to 8.0ha after drilling and geophysical surveys. The company is now processing a mini bulk-sample (100t), and intends to undertake large diameter drilling in 1H08 should the mini bulk-sample return economic grades.

**Tsabong (100%)** is a kimberlite field in south-west Botswana that hosts 83 kimberlites, of which 18 are diamondiferous, including the 180ha MK1 kimberlite. An exploration programme was initiated in March 2007 with the aim of undertaking narrow diameter drilling to evaluate prospectivity based on indicator mineral chemistry and pipe size. From this programme, 14 kimberlites will be prioritised for bulk-sampling.

To date, six kimberlites have been drilled, with eight to be drilled in 1H08. The company purchased a bulk-sampling plant with 10t per hour capacity in 2H07 to aid bulk-sampling, and intends to commission it in 1H08 to process 25-30 mini bulk-samples during the year.

Tsabong is known for its extremely large kimberlites, with the 180ha MK1 Firestone's most prospective target. Surface cover varies from 0-80m, but this isn't slowing drilling as only 10-20m of casing is required. In case of a deep cover discovery, bulk-sampling can be readily undertaken using LDD

to gather around 10,000t, which would take only 40 days to process using the company's plant.

**Orapa JV (39%/100%)** — Firestone has a large landholding around the Orapa and Letlhakane diamond mines. Central to the field are licences covering 5,000km<sup>2</sup> held in JV (De Beers earning into 61%), with De Beers undertaking the exploration. Exploration is being planned on a second 10,000km<sup>2</sup> of licences further from the mines, held 100% by Firestone.

Jwaneng JV (39%/81%/100%) comprises a large licence holding around the Jwaneng mine. Some 3,000km<sup>2</sup> is held in JV with De Beers (De Beers 61% earn-in), 380km<sup>2</sup> is held in JV with Daly City Ventures (Firestone 81% earn-in), and 3,000km<sup>2</sup> is held exclusively by Firestone. In 2007 De Beers discovered several new kimberlites, and completed around 50% of a highresolution airborne and ground geophysics survey. On completion of geophysics, De Beers intends to drill prospective targets in 2008.

Alluvial Mining and Exploration Projects, South Africa, comprise a suite of projects in the hinterland of the Atlantic coast of South Africa. Firestone intends to keep operating its toll-treatment JV at the Bonte Koe Mine, but in December 2007 announced the decision to sell or JV all other projects. This is the result of a strategic shift in focus to Botswana kimberlite exploration and low-risk toll treatment only.

Bonte Koe (75%) is a toll-treatment operation of gravels mined by De Beers from the Buffels River under a profit sharing arrangement. The plant is operated by African Star Minerals, Firestone's blackempowerment subsidiary. Production of around 600,000ctpa is expected over the next six years, generating revenue of some £3.5m and profits of £2m annually. There is potential to double production at the same cost base. On depletion of the De Beers resource, Firestone intends to exploit its own resource at Bonte Koe.

Groen River Valley (100% – for sale) is an exploration project over 500km<sup>2</sup> of the lower reaches of the Groen River, the mouth of which is mined by De Beers and other operators.

**Avontuur (100% – for sale)** is a 26km<sup>2</sup> alluvial licence in Namaqualand near the diamond-producing Hondeklip Bay area. In 2006 Firestone was pursuing acquisition of the Hondeklip Bay Mine from Trans Hex.

**Oena (87.5% – for sale)** is an alluvial mine on the lower Orange River. Covering  $85 \text{km}^2$ , the licence extends along 15km of the Orange River adjacent to the Auchas and Baken mines.

#### Opinion

In our opinion Firestone is an archetypal diamond explorer, albeit one with assets better than most, facing the classic problems of diamond explorers. Firstly are the odds of 1 in 100 kimberlite pipes being economic, although exploration to date has shown this to be up to 1 in 10 in Botswana. Not to worry though — the company is approaching 100 kimberlite pipes, and should any one of those prove economic, shareholders would see uplift.

Delays in securing LDD rigs and processing bulk-samples through labs are now common in the industry. In our view, it is these problems, and the need to generate news to support the share price, that has played a part in Firestone's share price over the last three years. For this reason, we think 2008 should be a turnaround year, with a bulk-sampling plant in Botswana (first outside De Beers' ownership) an excellent move as it should support both mini bulk-sampling (300t) and bulk-sampling (10,000t), and drive rapid newsflow.

#### **Investment Case and Recommendation**

**Investment Case:** The investment case and logic behind BK11 seems simple, and this certainly worked for African Diamonds, where the grade at AK6 increased from 3.5cpht to 25cpht on re-sampling Debswana's earlier holes. Yet if it were all so simple would De Beers have dropped the land? Some people would think so, but the acid test is bulk-sampling, and with the shortage of rigs and sample testing labs overstretched, we expect delays. Initial results from a 100t 'mini' bulk-sample were expected in 4Q07, so delays appear to have kicked in already.

The Tsabong project area looks highly prospective, and will be the key share price driver in 2008. The cover may prevent surface bulk-sampling, but is probably the reason the pipes haven't previously been evaluated properly, so this is very much a positive. The field hosts very big kimberlites, which give potential for large discoveries on a world-class scale.

Any cashflow valuation at this point is largely defunct. Put simply, if a single economic pipe is defined, the share price will increase in value, and for every year no such pipe is defined, expect share price drift.

An often overlooked component to diamond exploration in Botswana is the government's right to buy up to 50% of any new diamond mine, although this may be as low as 0%, or a value in between. There are arguments for and against the likely take up by the government of its share, but we think 0-20% is most likely, unless the discovery is of Jwaneng scale (US\$1.5bn revenue annually), where 50% is more likely. Firestone's 39%-owned assets (Orapa and Jwaneng JVs) could undergo additional dilution if this occurred. This makes the 100%-owned Tsabong field the asset most like to support future growth.

Recommendation: Despite our cynicism on the odds of discovering a commercial pipe, and the time to take and process bulk-samples, we firmly believe Firestone has one of the most attractive portfolios of kimberlite pipes around. The key point is timing; economic certainty comes with bulk-sampling, not mini bulk-sampling, but with their own plant and good geological understanding Firestone could prove pipes economic (and thus lift the share price) faster than most, potentially ahead of bulk-sampling, and may well see uplift with 2-3 mini bulk-samples given the previous core drilling.

Government dilution is an issue, but this is balanced against more difficult political and logistical climates in the DRC, Angola and Sierra Leone. The critical test case will be African Diamonds AK6, with the Botswana Government's share to be decided in the coming months. Firestone is probably one of the most likely juniors to reach that 'holy grail' of momentum, and define more than one economic project. High risk, but look for high rewards. 30 January 2008

# Gem Diamonds

## Price: 849p

#### Upcoming Events:

Letseng 2<sup>nd</sup> plant completed (2Q08) Longatshimo trial mining (mid-08) Gope BFS updated (mid-08) Interims (Sep-08) Angola option taken (2008)

Market cap	£529.8m
Ticker	GEMD LN
EV / in-situ value	10.0%
EV / 08E revenue	6.2x
Cash in hand (£m)	120
52 week (p)	
High	1140
Low	875
3M-avg. daily vol. (000s)	106
3M-avg. daily val. (£000)	1,022
Shares	
Basic	62.4m
Fully diluted	62.7m
Top shareholders	
Blackrock	12.0%
Capital International	8.0%
Artemis	6.6%
Legal & General	5.1%
F&Č	5.1%
Total	36.8%



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Main Assets						
Project	Ct (m)	Grade (cpht)	US\$/ct	US\$/t	Interest	Stage
Letseng - South Africa	3.1	1.76	1,488	26.2	70%	Mining
Ellendale - Australia	6.3	5.85	155	9.1	100%	Mining
Cempaka - Indonesia	3.6	2.0	244	4.7	80%	Mining
Alluvial projects - DRC	10.3	42.3	94	39.9	94%*	Mining
Gope - Botswana	18.9	19.4	131	25.5	100%	Exploration
Mambere - CAR	0.9	5.5	175	9.7	75%	Exploration

\*Average on carat basis over four projects; Source: Company data

#### **Company Description**

Focus and Strategy: Gem Diamonds arrived on the diamond scene with a fanfare in February 2007, raising US\$635m (£321) on listing - £77m for existing DRC and CAR projects and £190m for acquisitions. In its first year of operations the company has had one win (production and value up at Letseng), one loss (disappointing CAR sampling results), and one delay (DRC logistics proving tough). Acquisitions totalling £200m in 2007 were:

- Gope, a kimberlite pipe in Botswana: US\$34m;
- BDI Mining, an alluvial operator in Indonesia: US\$53.6m effective;
- Kimberley Diamond Company, an Australian kimberlite miner: US\$263m; and
- the remaining 50.01% of DRC assets: US\$56.2m.

Gem had US\$519m in cash at June 2007, with 2H07 allocation expected to be US\$60m for internal project development (Botswana, Indonesia, DRC and CAR) and US\$275m for settlement of the Kimberley Diamonds and BDI acquisitions. This leaves an unallocated US\$190m, which the company expects to use for both further acquisition(s) and development of largescale mining projects (presumably Chiri in Angola and Gope in Botswana).

As the shift to organic growth kicks in, major capex is planned to facilitate increased production at existing mines and development of resources on pre-production assets. Although US\$5.5m is budgeted on DRC exploration, the company's focus is on acquisition and development.

Management: Gem is headed up by CEO Clifford Elphick and Nonexecutive Chairman Roger Davis. From the Anglo American/De Beers stable, he previously worked as MD of E Oppenheimer and Son from 1990 to 2004, during which time he was also a director of Central Holdings, Anglo American and DB Investments. Chief Mineral Resources Manager Graham Wheelock is also from Anglo American/De Beers, where he worked on alluvial diamond operations globally. Significantly for Gem Diamonds' acquisition trail, Graham led the De Beers Global Exploration Targeting Team for kimberlite and alluvial resources in 2004 and 2005.

Project	Equity	Comment				
		PRODUCING				
Letseng - Lesotho	70%	Kimberlite mine - low grades mean US\$870/ct opex, but revenue averages well over US\$1,300/ct				
Ellendale - Australia	100%	Kimberlite mine - acquired Kimberley Diamonds in 2007, high-value fancy yellow stones				
Cempaka - Indonesia	80%	Alluvial mine - acquired in BDI acquisition, Gem to ramp up operations, potential for dredging				
Mbelenge - DRC	100%	Alluvial mine on Kasai River				
	DEVELOPMENT					
Lubembe - DRC	100%	Alluvial operation on Tshiumbe and Lubembe Rivers				
		ADVANCED EXPLORATION				
Longatshimo - DRC	78.9%	Alluvial operation - pit sampling in progress, trial mining scheduled for mid-2008				
Gope - Botswana	100%	Large kimberlite with defined resource under cover - issues around Bushmen				
Chiri - Angola	20%*	Exposed kimberlite, Gem considering agreement for 20% earn-in for US\$22.5m				
GRASSROOTS EXPLORATION						
Mambere - CAR	75%	Grades during bulk-sampling less than expected, further opportunities in country being looked at				
Longatshimo/Mbelenge - DRC	100%	Kimberlite exploration - 79 kimberlite targets, 21 drilled, 2 identified for follow-up				

**Project Summary** 

\*Agreement for 20% earn-in; Source: Company reports

Letseng (70%) is a kimberlite mine which was acquired for US\$118m in September 2006 from South African mining house JCI, which operated it from 1977-82, and from 2004 onward. The current resource of 178Mt is very low grade (1.8cpht), but stones average exceptionally high prices (US\$1,488/ct). Much of the high value is based on large stones — over 90% of stones are gem quality, and 14% are larger than 10.8ct.

The venture could be considered high-risk on the basis of the irregular supply of such stones, but is currently performing to expectations with a 100ct stone for every 10,000cts produced. Historically, the mine has produced several named stones, including the Lesotho Brown (601ct), Lesotho Promise (603ct) and the Letseng Legacy (493ct). In the company's first operating period, Letseng certainly delivered well ahead of expectations. The resource valuation of US\$1,307/ct was reviewed upward to US\$1,488/ct, and 1H07 production figures didn't disappoint with an average value of US\$1,770/ct. This is not down to luck, with management targeting the mine on the basis of exposure to the rising prices of large stones (with Letseng a premier big-stone mine).

Given the mine life of 70 years on acquisition, Gem's strategy is to double capacity from 2.64Mtpa to 5.28Mtpa with the addition of a new plant. Construction is well underway, with commissioning expected in 2Q08 at a cost of within 15% of the targeted US\$45m.

Ellendale (100%) comprises two economic kimberlite pipes currently being mined, and seven pipes under evaluation through a LDD programme. The combined resource is 107.5Mt @ 5.8cpht at US\$155/ct. Exploration is underway on regional licences through 39%-owned Blina Diamonds, with high grades intersected in recent alluvial sampling.

Ore is processed from two plants, Ellendale 4 and 9, at a combined rate of around 6Mtpa, at an average grade of 7.5cpht in 3Q07, producing at a rate of 450,000ct pa. The 2006 average value was good at US\$173/ct, in line with expectations, but this fell to US\$134/ct in 2007.

Many of Kimberley Diamond's pre-acquisition woes were the result of consistently failing to achieve targets, and ultimately the 10Mtpa (650,000ctpa) processing rate. Post-acquisition, Gem intends to ramp up production — Kimberley Diamonds stated that further capital investment should facilitate greater throughput and lower costs.

**Cempaka (80%)** is an alluvial operation acquired in the 2007 takeover of BDI Mining for US\$80.1m (effective cost of US\$53.6m after sale of gold operations for US\$26.5m). Gem plans to undertake a variety of initiatives to scale up the mining operations to 80,000bcm/month for US\$16m.

The current resource is 184Mt @ 1.9cpht with an average value of US\$244/ct. Gem has delineated additional resources, and is investigating large-scale dredges to ramp up mining rates from 40,000 to 125,000ctpa.

The DRC hosts four projects — Gem owned 49.99% of the licences on listing. The remaining 50.01% was acquired in 2007 for US\$56.2m with a deferred payment of 5% of the value of any kimberlite discovered within five years on which a BFS is completed. The total resource base is 24.3Mt @ 4.2cpht with an average value of US\$94/ct.

Around US\$5m has been budgeted for 2008 kimberlite exploration in the DRC: 69 geophysical anomalies have been identified, 23 have been drilled, and follow-up on two is ongoing.

**Mbelenge (100%)** is a DRC alluvial mine on which a 100tph plant was commissioned ahead of schedule in 2007. However, the initial feed is low-grade, and other challenges have delayed the build-up period.

Lubembe (100%) is focused on a river resource on which trial dredging was undertaken in 2007. The company is now up-scaling the operation.

**Longatshimo (78.9%)** is an earlier-stage alluvial project — pit sampling is ongoing and the company aims to move to trial mining in late-2008.

Tshikapa (100%) is scheduled for bulk-sampling in 2008.

**Gope (100%)** is a kimberlite pipe in Botswana, purchased for US\$34m from a De Beers/Xstrata consortium in 2007. The pipe was discovered in 1981, with US\$60m spent on feasibility studies, which in 1998 deemed the project unviable, in part because of the 70m of sand cover.

An additional complication is the 2006 decision by the Botswana High Court that the Botswana Government is culpable of unlawfully removing San Bushmen from the land. The action was funded by NGO Survival International. However, positive progress has been made since, with the government's decision to lift the suspension of the retention licence over the deposit in October 2007.

The pipe has a resource of 97Mt @ 19.4cpht with an average value of US\$131/ct based on a 3,400ct parcel. A feasibility study has now commenced for a 6Mtpa mine with capex of around US\$500m.

Mambere (75%) is an alluvial exploration prospect in the CAR. After positive results from pit samples, a 15tph DMS plant was commissioned in 2007, but the grades of 1.1cpht were below expectations. An exploration programme along the Mambere River continues, and reconnaissance exploration upstream in the valley will be undertaken in 2008.

#### Opinion

Gem certainly can't be accused of standing still, with significant progress made in 2007. Operationally, the company's first year has provided a mixed bag; the success story of the year is clearly Letseng, where production is up and the big stones needed are being recovered. However, the first disappointments have also been logged on the books, as the move into CAR failed to live up to expectations, although we still think the country is very prospective. Proving that even majors struggle in emerging countries, progress is going slower than Gem had planned in the DRC. At Mbelenge, commissioning problems slowed the ramp-up of the onshore plant, while at Lubembe there was a production shortfall related to floods, followed by late delivery for dredges (which were then reported to have design shortcomings).

The Indonesian, Australian and Botswana assets show promise, but have realistically not been in Gem's control long enough for tangible progress to have been reported. In our view, Cempaka offers major upside, but at risk, like most alluvial projects. The Ellendale operations in Australia seem far more positive, with the rise in high-value stones likely to pay off well for Gem — we think the purchase price was surprisingly low.

We don't like Gope in Botswana; while political progress has been made with the government, NGO Survival International is pursuing the San Bushmen's rights and we think Gem might get stuck in the middle. Also, the 70m of cover and major capex requirement make this a major challenge. However, the company is targeting an updated BFS by mid-2008, and if it can negotiate the politics, and prove the pipe economic, its size suggests it could be highly profitable.

#### Investment Case and Recommendation

**Investment Case:** Gem has a suite of assets which all have excellent potential, but the key theme is that they are largely unproven. Most of these assets are good, but we believe the market has recognised the value and priced them fairly. As such, upside will rely on operations delivering against the expansion plans laid out by Gem.

We think the operations that should be able to prove their potential in 2008 will be Letseng, Ellendale, DRC alluvials and perhaps Indonesian operations. In the longer term, Botswana and Angolan kimberlites may well provide growth, but expect lengthy development timeframes to stretch into several years. And finally, after initial disappointments, CAR projects can only be given a speculative status, although, this is a highly prospective country.

**Recommendation:** Looking at the above breakdown of the likely timing of project improvements, we think that the addition of an acquisition to potential positive news from two big-stone mines and DRC alluvial operations should give Gem enough momentum in 2008 to move the share price upward. At under £9.00 there is serious potential for growth in our view. A major point for Gem is the rapidly appreciating large-stone price, to which the company has deliberately given itself maximum exposure through Letseng and Ellendale.

This comes with risk of projects disappointing, as alluvial projects have a tendency to do. If that occurs, we would expect negative drift as Gope and Angola take time to develop, especially if Ellendale benefits don't hit the bottom line in 2008.

30 January 2008

# **KimCor Diamonds**

## Price: 6.4p

Buy

Upcoming Events: FY08 year end (Mar 08) Full year results (Aug 08) Tanzania bulk-samples (Sep 08)

Market cap	£17.1m
Ticker	KIM LN
EV / in-situ value EV / 08E revenue Cash in hand (£m)	7.5% 2.0x 3.4
52 week (p) High Low	12.25 5.5
3M-avg. daily vol. (000s) 3M-avg. daily val. (£000)	198 6.0
Shares Basic Fully diluted	268.3m 278.6m
Top shareholders Dwyka Resources FHF Nominees HSBC Nominees Coffee House Group Total	48.2% 12.1% 7.7% 4.4% 72.4%





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Ambrian acts as Broker to this company

Project	Ct (m)	Grade (cpht)	US\$/ct	US\$/t	Interest	Stage
Blaubosh u/g	324,120	30	110	33.0	70%	Production
Blaubosh tailings	72,000	8	50	4.0	70%	Production
Newlands u/g	635,631	23	85	19.6	70%	Production
Newlands tailings	19,740	7	50	3.5	70%	Production
Nooitgedacht alluvial	162,000	1	500	5.0	70%	Production
New Elands u/g	102,892	34	180	61.2	70%	Evaluation
SMI4 tailings	927,000	6	60	3.6	70%	Production
Bellsbank tailings	166,410	4.3	110	4.7	74%	Production
Tanzania JV	-	-	-	-	-	Exploratior
Bricks/cement	-	-	-	-	-	Industrial
Total	2,409,793	111.1	14.4	-	70%	-

Source: Company data

#### **Company Description**

**Focus and Strategy:** KimCor is focused on processing tailings, as well as kimberlite and alluvial resources, mainly around the Kimberley area of Southern Africa. Additional operations include a brick/cement business, which leverages off processed diamond tailings as feedstock for input, a central sorting facility where all stones are processed, a cutting and polishing business, and an exploration JV with De Beers in Tanzania.

The business model is based on ramping up production and increasing recovery at existing operations. This will be paid for by the capital injection provided by the £4.3m equity raise associated with the September 2007 acquisition of Dwyka Diamonds Holdings. The key growth driver for KimCor is achieving production targets from its five mining operations, the cutting and polishing works, and two industrial operations. A summary of the target diamond production and revenue for 2008 and 2009 is shown on the following page, based both on the CPR and subsequent objectives published by the company.

Management: KimCor is led by CEO Martyn Churchouse. Martyn is a geologist with 25 years' experience, including 14 years in South Africa, Namibia and Ghana. He also spent seven years working on exploration and mining projects in Eastern Europe, including as a mine manager at a 2.5Mtpa tailings treatment project. In South Africa, MD Cedric Bredenkamp has worked on a variety of diamond industry projects in both plant construction and operation roles and in management. Cedric also has experience in the brick and paving businesses. Non-executive Chairman Melissa Sturgess has experience in corporate development, and is also non-executive director of AIM-listed Bezant Resources, Churchill Mining and Sylvania Resources. Roger Harris, an engineer, is a non-executive director with 40 years' experience in the mining industry. He is executive chairman of Central Gold Securities.

	Froject Summary					
Project	Equity	Comment				
		PRODUCING				
Bellsbank - South Africa	74%	Tailings recovery, upgrade with DMS and pre-concentration plant underway				
Blaauwbosch - South Africa	70%	Kimberlite and tailings production, underground development and plant upgrades underway				
Newlands - South Africa	70%	Kimberlite fissure mine, underground development and plant upgrades underway				
Nooitgedacht - South Africa	70%	Alluvial diamond mine, plant upgrade and expansion underway				
SMI4 - South Africa	70%	Tailing treatment plant, high-volume potential, additional contract mining to start 1Q08				
		EXPLORATION				
Bosele - South Africa	70%	Exploration 30km NW of Kimberley, fissure kimberlites, near Bellsbank plant				
De Beers JV - Tanzania	95%	Bulk-sampling of two kimberlites of 6.8ha and 2.3ha, De Beers can earn in 51%				
Koffiefontein	70%	50km SE of Kimberley, 10,000ha prospective for kimberlite discoveries				
		OTHER				
Anmic - South Africa	50%	Cutting and polishing of high-value stones, particularly from Nooitgedacht alluvials				
Supermix - South Africa	70%	Brick and cement business that operates with discounted inputs from Nooitgedacht				
Sorting Facility - South Africa	70%	Diamond processing and recovery from concentrates				

**Project Summary** 

Source: KimCor

**Bellsbank (74%),** 60km north-northwest of Kimberley, is a tailings recovery project processing ore from the underground Bellsbank Mine where a new plant was commissioned in late-2006. The current resource is 3.8Mt @ 4.3cpht and US\$110/ct. The current mine life is around three years, and KimCor is in discussions with owners of other dumps within an economic operating radius.

Development by KimCor includes the recent commissioning an 8tph DMS plant (currently being commissioned) and contemplation of a preconcentration plant to increase throughput. The dense media separation plant has an increased name-plate processing capacity of 75,000tpm for expected production of 3,000cts. Further expansion aims to increase the production rate to 4,650cts per month. The average value of gem quality diamonds recovered at Bellsbank is US\$110/ct, whilst the industrial stones command US\$18/ct. With a recent ratio of 2.5:1, the blended average stone value is US\$85/ct.

Blaauwbosch (70%) is an operating underground kimberlite mine with additional production supplied by tailings processing. The project comprises a main kimberlite pipe (700,000t at 30cpht and US\$110/ct), fissures extending from the main pipe (380,500t at 35cpht and US\$110/ct), and tailings dumps (900,000t @ 8.0cpht and US\$75/ct). Of the total SAMREC-compliant resource, 25% is in the indicated category and 75% is in the inferred category.

The current emphasis is still on underground mine development and plant expansion, with ramp-up to full production expected by July 2008. The new processing plant design capacity is 21,000tpm, comprising 11,000tpm of primary ore from underground and 10,000tpm of tailings to be retreated. The underground ore is expected to yield 3,300cts/month at US\$110/ct and the tailings to yield 800cts/month at US\$50/ct.

**Newlands (70%)** is an operating underground mine 60km north-west of Kimberley. The resource is based on several kimberlite fissures, which, in places, 'blow' out in thickness to form five economic mining zones. There are three shafts on the property, two of which are operational. The

current kimberlite resource is 2.9Mt @ 22.6cpht and US\$85/ct, while the tailings contain 0.28Mt @ 7.0cpht and US\$85/ct.

Mining is undertaken using shrinkage stoping methods, and exploration is underway to take bulk-samples from Blow 5, and to test continuity below Blow 3. Should these prove economic, hoisting from underground could increase from the initial planned 10,000tpm to 15,000tpm.

The bulk of underground development is complete with multiple sources being accessed to contribute to the planned production rate of 7,000tpm, which is expected to yield 1,600cts/month at US\$85-100/ct. Added to this, 25,000tpm of tailings material will be re-processed, and is expected to yield 1,200cts/month at US\$50/ct.

**Nooitgedacht (70%)** is an alluvial diamond operation 15km north-west of Kimberley. The current inferred resource is 16.2Mt at an estimated (non-SAMREC/JORC) 1.0cpht, with average diamond value of an estimated US\$500/ct. The mine is characterised by a low average grade and a small number of exceptional stones.

The key to the operation is an internal contract to supply aggregate to the Superkolong business unit from processed ore, as the plant has been reconfigured to deliver 'waste' gravel as aggregate. Costs are US\$4.20/t, with diamond revenue of only US\$4.45/t, but an additional US\$5.5/t is realised from aggregate sales.

Two contractors will be engaged in 1Q08 to process 1.2Mtpa of alluvial gravel, paying 15% royalty (sliding to 25% for high-value stones), adding directly to the bottom line.

SMI4 (70%) — KimCor recently acquired 26.4% of diamondiferous tailing mineral resources (TMRs) in Kimberley, South Africa, from De Beers for £195,000. KimCor's share of the TMRs totals 15.4Mt, a significant increase on the previous resource of 3.7Mt. These will be processed by the existing upgraded SMI4 plant, extending the project life by at least ten years.

The SMI4 plant was commissioned prior to acquisition by KimCor, and processed at a rate of 32,000tpm for an expected production of 2,000-2,200cts at US\$45-60/ct. Phase 2 expansion by KimCor is underway and SMI4 is scheduled to increase production rates to 100,000tpm for an expected production of 6,000cts/mth by the end of February, with a further increase to 150,000tpm generating 9,000cts/mth by July 2008. This should provide equivalent to 50% of the group's annual target production from the end of 2008.

**Supermix (70%)** comprises a brick and paving producer and a ready-mix concrete producer, located on the outskirts of Kimberley. In addition, two business units feed into these producers — the Nooitgedacht aggregate production as described above, and De Hoop, which owns a mining permit to produce sand and gravel. Changes in operating procedure at Supermix implemented by KimCor post-acquisition have turned around the business which is now operating profitably.

Anmic (50%) is a cutting and polishing business that should be able to realise significant profits from cutting, especially on large stones. Cut prices are typically 100% higher than rough prices, but with cutting loss and costs this equates to 50% uplift. For example, a 1ct rough stone valued US\$200 would sell for US\$300 net of costs.

De Beers JV (95%) is currently bulk-sampling kimberlites. Under the JV KimCor will process 18,000t of kimberlite until September 2008. Once bulk-sampling is complete, these pipes have the potential to increase KimCor's diamond inventory substantially, with the two pipes representing the largest single kimberlite resource within the group's portfolio. De Beers has the right to acquire 51% through reimbursement of 3x costs.

The two pipes cover 6.77ha and 2.3ha, with estimated grades of 26.2cpht and 8cpht, respectively, based on interpretation of microdiamond studies only. A pilot processing plant is now in transit to Tanzania, with commissioning expected in 1Q08. Drill core sampling by De Beers indicates the pipes are potentially economic.

#### Opinion

Since combining the Dwyka and KimCor diamond assets, KimCor's management has consistently hit operational targets giving us confidence the company will achieve its production rate of 200,000ctpa in 2008. For this reason we remain positive on KimCor; our forecast for 2008 revenue is £9m excluding industrial operations and cutting. However, the company remains in a state of transition as it expands and improves operations on an ongoing basis.

Recently-announced diamond sales revenue shows robust diamond prices across five operations, with US dollar per carat values in line with resources after several months of consolidating operations.

#### Investment Case and Recommendation

**Investment Case**: We estimate revenue potential of approximately US\$17m in 2008, rising to an annual rate of up to 250,000cts from 2009 for over US\$20m in revenue, with additional upside from the ready-mix concrete and brick/paving business.

The key share price driver will be achieving annualised production of 200,000ctpa in 2008. Based on rough estimates of operating costs, we believe KimCor could achieve attributable operating profits of £3.9m from existing diamond operations. This equates to a P/E ratio of 4.4x based on the current share price; we would expect this to approach 7.5x when operating targets are achieved.

Further uplift will come from both the cutting and polishing business (50% mark-up on rough prices from recent Blaauwbosch and Newlands production) and industrial brick, paving and cement operations. However, these are only rough estimates, and we await a more detailed breakdown of costs by operation, as well as updates on mining and processing rates, before we prepare a DCF model of operations.

**Recommendation: BUY**. We maintain our BUY recommendation, with growth offered through potential bolt-on acquisitions, and exposure to diamond price escalation. In the medium term, we would also expect development of exploration ventures to provide additional diamond production revenue.

30 January 2008

## **Kopane Diamond Developments**

Price: 15.2p BUY – Target price 38p

Upcoming Events: JSE listing (1Q08) Bulk drilling Liqhobong (1Q08) Main pipe DFS (4Q08)

Market cap	£16.7m
Ticker	KDD LN
Price Target (GBp)	38
EV / in-situ value	4.6%
EV / 08E revenue	4.3x
Cash in hand (£m)	1.80
52 week (p)	
High	25.0
Low	13.7
3M-avg. daily vol. (000s)	182
3M-avg. daily val. (£000)	16.9
Shares	
Basic	109.6m
Fully diluted	176.7m
Top shareholders	
JP Morgan	7.8%
RAB Capital	6.6%
A J Williams	4.6%
DKR Saturn	4.4%
Total	23.4%



Source: Fidessa

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Main Assets						
Project	Ct (m)	Grade (cpht)	US\$/ct	US\$/t	Interest	Stage
Liqhobong Main Pipe	11.54	27.4	70	19.1	75%	Development
Liqhobong Satellite Pipe	0.76*	69.0	41.2	28.4	75%	Production

\*MineGem resource, net of estimated depletion. Source: Ambrian, Company data

#### **Company Description**

Focus and Strategy: Kopane Diamonds Developments is an AIM-listed producer, focused on the development of its primary asset — the Liqhobong Main Pipe in the Kingdom of Lesotho in South Africa. Founded in 2000 as European Diamonds, the company originally targeted grassroots kimberlite exploration in Finland. It shifted focus to the southern hemisphere with the acquisition of MineGem, a TSX-listed company that had cash issues developing the Liqhobong pipes, and disposal via JV of 70% of its Finland assets in January 2008.

Production is underway from the small (1ha) Satellite Pipe, and has ramped up since 2005 to the current rate of around 180,000ctpa at US\$55/ct which includes a blend of Main Pipe kimberlite. A Definitive Feasibility Study is currently underway on the much larger (8.5ha) Main Pipe; the completed pre-feasibility study modelled a resource of 55.5Mt containing 11.5Mct @ 27cpht which would sustain an output of 900,000ctpa at US\$70/ct. Like Gem Diamonds' Letseng mine, this is a bonanza-stone kimberlite. In bulk-sampling a large stone of 100+ carats was discovered, although it was crushed in processing into four large fragments of a combined 78ct weight.

Because ramp-up at the Satellite Pipe was slower than expected, and with a historically split focus between Finland and Lesotho, the share price has fallen over the last five years. However, in July 2007 a management reshuffle led to the appointment of the highly-rated Tim Read as executive chairman, and the Finnish assets have been vended out to a JV with Mantle Diamonds, a private UK company. Mantle will spend US\$5m in exploration and development of the assets and will pay 10m shares to Kopane. This gives a look through value to the Finnish assets of £3.6m.

**Management:** In the July 2007 management reorganisation Tim Read joined the company as Executive Chairman, and Stephen Lay joined as COO. Former CEO Roy Spencer stepped down and former chairman Buddy Doyle stayed on as a Non-executive Director.

This reshuffle is key to the future growth of Kopane; Tim Read has over 35 years' experience in mining and finance, formerly as CEO of Adastra Minerals which was sold to First Quantum Minerals. Tim worked as cohead of mining investment banking at Merrill Lynch. Stephen Lay has extensive experience in mining project development and operations.

#### Project Summary

Project	Equity	Comment
		PRODUCING
Liqhobong Satellite Pipe	75%	First production in 2005, currently producing at 180,000ctpa (Main Pipe kimberlite blended), at US\$55/ct. Approx four-year life of reserves, depth potential for further five-year life of resource
		DEVELOPMENT
Liqhobong Main Pipe	75%	11.5Mct resource with average value of US\$70/ct. 45,000t of bulk-sampling completed, deep drilling commissioned to contribute to 2008 Definitive Feasibility Study.

Source: Main Pipe: July 2007 company report, Satellite Pipe: 2001 MineGem report and company data

Liqhobong Satellite Pipe (75%) — The Liqhobong properties are located in Lesotho, where they were discovered in the late 1950s and acquired by the then TSX-listed MineGem in 1996. When MineGem ran into liquidity issues it was de-listed and Kopane acquired the assets in an all share offer for 4.99m Kopane shares in 2003.

Kopane commenced production in 2005 with a target mine life of five years at an estimated installed capacity of 290,000ctpa. A variety of technical issues ensued, including mining and processing problems, lack of skilled labour, and equipment delivery delays. The current production rate is 180,000ctpa, with an achievable target capacity of 250,000ctpa. Previous sales are shown below, although this includes a small portion from the cap of the Main Pipe.

Sales from Liqh	obong Satellite Plan	t	
Period	Carats	Revenue (US\$m)	Average value (US\$/ct)
1H06	25,382	1.126	44.37
2H06	30,025	3.157	105.15*
1H07	47,286	2.282	48.26
2H07	77,575	3.808	49.09

\*Included 27.7ct D flawless stone sold for US\$2.2m (US\$27,000/ct); Source: January 2008 production update

The attraction of the asset is that the plant can be used to undertake bulk-sampling of the Main Pipe, allowing development of the resource to occur at or near a breakeven cashflow.

**Liqhobong Main Pipe (75%)** — The Main Pipe contains a much larger resource, which was originally interpreted as being lower-grade. Following a 7.6km drill programme the geology was reinterpreted to comprise multiple phases, the majority of which were higher-grade than near-surface regions historically bulk-sampled.

The first bulk-sample of 30,000t returned grades of 28.2cpht, while this was a considerably higher 41cpht in the second. The average stone value of the first bulk-sample was US\$70/ct, but this excluded a bonanza stone, with four large fragments of a combined 78ct weight selling for an average of US\$18,333/ct. The company estimates that so far overall sales from stones recovered from the Main Pipe, which are blended with Satellite Pipe stones at sale, are materially in excess of US\$70/ct.

Although difficult to quantify, large diamonds have a huge impact on the average stone price. By including the 78ct fragmented stones the average price from bulk-sampling rises to US\$166/ct from US\$70/ct; this rises further to a US\$214/ct average when including a 27ct clean flawless D

stone. In an independent study of the macro-diamond size distribution by MM Oosterveld, it was estimated that 1.5Mt of kimberlite would yield 30 stones larger than 50 carats and seven stones larger than 100 carats.

A pre-feasibility study was completed by the company and verified by ACA Howe in mid-2007, with key metrics shown below. The mine life is based on an open pit to 280m below surface, although drilling indicates the pipe extends to at least 650m depth.

Key Metrics for Liqhobong Main Pipe Pre-feasibility Study					
Modelled mined-resource	55.5Mt @ 27cpht and US\$70/ct				
Mine life	16 years @ 3.5Mtpa				
Сарех	US\$100m including contingency				
Орех	US\$11/t (US\$40/ct)				

Source: July 2007 company report

The Lesotho Government has a 25% interest in the project, with 12.5% a free-carry and 12.5% repayable. Both pipes are covered by an existing 20-year mine licence.

Resource and	Reserve - Liq	hobong Satell	ite and Mair	n pipes		
Category	Tonnes (Mt)	Grade (Cpht)	Carats (m)	Attributable carats (m)	US\$/ct	US\$/t
		Liqhobo	ng main pip	e		
Indicated	13.99	28.16	3.94	2.96	70	19.7
Inferred	28.17	26.99	7.60	5.70	70	18.9
Total	42.16	27.4	11.54	8.66	70	19.2
		Liqhobon	g satellite pi	pe		
Probable	1.39	68.0	0.94	0.70	41.2	28.4
Indicated*	1.40	68.7	0.96	0.72	41.2	28.3
Inferred	1.07	-	-	-	-	-
Total	1.40	68.7	0.96	0.72	41.2	28.3
		Globa	al Resource			
Indicated	15.39	31.84	4.9	3.67	64.3	20.5
Inferred	28.17	26.99	7.60	5.70	70	18.9
Total	43.56	28.7	12.5	9.4	69	19.8

\*Includes probable. Source: Main Pipe: July '07 resource, Satellite Pipe: '01 MineGem resource excluding depletion

**Finland JV (30%)** — In January 2008 the company signed a JV with the unlisted UK company Mantle Diamonds under which Mantle earns up to 70% of 28 mineral claims in Finland. Under the agreement Mantle is required to spend US\$5m on exploration, including a bankable feasibility study on the Lahtojoki property, as well as making a staged payment to Kopane of £2m in Mantle Shares (10m at a value of £0.20 per share).

The Finland assets comprise several diamondiferous kimberlite pipes discovered by Kopane, including the Lahtojoki kimberlite pipe (discovered in 2004), which is currently subject to a bulk-sampling programme.

#### Opinion

**Upside in big stones** — For Kopane, upside lies is in the Liqhobong Main Pipe. Similar to its bigger Lesotho cousin, the Letseng kimberlite, most of the value and all of the upside in the Main Pipe lies in large stones. These are always difficult to predict, even through bulk-sampling, but in a bulk-sample of only 0.045Mt a potentially 100ct+ stone has already been recovered. The key difference between Liqhobong and Letseng is grade — with Liqhobong (30-40ctpht) much higher grade than Letseng (2.06cpht).

We think the Main Pipe is a lower-risk investment proposition which should generate US\$30/ct of EBITDA on a grade of 0.28cpt at US\$70/ct value and at US\$11/t costs. It becomes hugely profitable if large stones are recovered. Letseng is a loss-making operation outside large stones, although the grade is balanced against value of US\$1,000-1,750/ct.

More than breakeven for run-of-mines stones — Value lies not only in the big stones, with high value run-of-mine stones. Much of the bulksample came from the K2 facies, which represents some 50% of the surface expression of the kimberlite, but tapers at depth. The K4, K5 and K6 facies, which have higher-than-average grades, expand at depth and are thus likely to represent a larger proportion of the overall resource.

The management reshuffle in mid-2007 should prove a turning point for the company. Whilst under previous management the share price fell consistently over several years, Tim Read has a track record of valueadding to emerging producers.

**Development funding and experience**, in the form of cash from the satellite operation, is also valuable for the company. Not only will cash reduce the requirement for dilution to a small extent, operations staff from the plant will also have a clear advantage when compared to a fresh start-up operation. Also, with long timeframes for bulk-sampling a key issue in the industry, the ability to batch treat Main Pipe ore through the Satellite Pipe plant is also beneficial.

#### Investment Case and Recommendation

**Investment Case:** The key question for any investment in Kopane is the average stone value. Put simply, and like African Diamonds (AK6) and Gem Diamonds before them (Letseng), we believe 2008 bulk-sampling will provide the evidence needed to bring this into profitable production.

Our NPV calculation for the Main Pipe is, of course, heavily influenced by three key inputs — grade, value and diamond price appreciation. Unlike Letseng, the most conservative base case should be profitable, but should diamond prices appreciate at 2.5% nominal, grade rise to 35cpht, and (we think most likely) prices rise to US\$100/ct with big stones, this climbs to over £120m.

**Recommendation: BUY** – target price 38p. Our initial target is based on an NPV<sub>10%</sub> calculation with key inputs of 2.5% nominal diamond price appreciation, grade at bulk-sample level of 27.8cpht, and limited exposure to large diamonds with a value of US\$85/ct (as opposed to US\$70 excluding big stones, and US\$200/ct including big stones to date). We've also included 3% sustaining capex, an 8% royalty, sales fees of 2.5% and sales costs of 1%. There are 39m warrants in place, although in our estimation only 25m (@30p) will be in the money at expiry, which we've factored into the diluted issued share capital. 30 January 2008

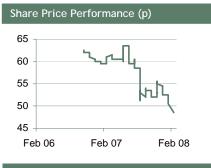
# Pangea DiamondFields

### Price: 48.5p

**Restricted Period** 

Upcoming Events: Pilot Mining Dimbi (1Q08) Audited results (May 2008) Bulk-sampling Longatshimo (1Q08) Full mining Cassanguidi (4Q 08)

Market cap	£59.3m
Ticker	PDF LN
Price Target (p) EV / in-situ value Cash in hand (£m)	N/A 60.5% 3.5
52 week (p) High Low	63.5 48.5
3M-avg. daily vol. (000s) 3M-avg. daily val. (£000)	9.3 52.9
Shares Basic Fully diluted	117.4m 128.4m
Top shareholders Capital International Suri Investments Chartered Holding Mining Conces. Mauritius Total	19.0% 7.7% 7.5% 7.0% 41.2%



Source: Fidessa

#### Analyst

Brock Salier Metals & Mining +44 (0)207 776 6402 brock.salier@ambrian.com Ambrian acts as Broker to this company Main Assets Ct Grade Project US\$/ct US\$/m<sup>3</sup> Interest (m) (cpm<sup>3</sup>) Stage Cassanguidi - Angola 0.99 0.22 150 33.0 33% Pilot Mining Dimbi - CAR 0.35 90% 1.05 140 61.3 Bulk-sampl'g Longatshimo River - DRC 0.08 175 70.0 80%-100% 0.40 Bulk-sampl'g

Source: Company data

#### **Company Description**

Focus and Strategy: Pangea DiamondFields is an explorer and developer focused on bringing a pipeline of African alluvial operations into production. Given the inherent risks in both diamond exploration and operating in emerging African countries, the company has adopted a modular assessment and development strategy across four of the six most prospective diamond countries in the world.

To develop projects, Pangea runs a distinct phasing whereby initial reconnaissance and exploration work is carried out at a cost of around US\$1.5m per project. This is followed by placement of bulk-sampling equipment on site, typically at a cost of around US\$3.5m. After bulk-sampling, pilot mining is undertaken over a 6-12 month timeframe at a cost of around US\$2.5m, followed by commercial mining on a modular basis, typically costing US\$11.5m. Target processing rates are 450,000m<sup>3</sup> pa, with operations configured for future up-scaling.

In the above framework Pangea has six exploration projects, three in bulk-sampling and one in pilot mining, although the company expects to advance two more to pilot mining in the next three months. Growth over the next year is based on bringing three operations into commercial mining. Costs are typically high due to diesel generator requirements, but deposits with stones of US\$150/ct+ are the target, and the company follows a metric of revenue being 3x operating costs on each operation.

In 2007 Pangea had the option to purchase the Kao diamond pipe in Lesotho, but the company did not exercise this option (no cost).

Management: Rob Still's hands-on approach and experience is key to the growth strategy. Rob was trained as an accountant, but has been involved in mining for 21 years, and was instrumental in the development of mining projects subsequently developed by Metorex\* and Pan African\*, BHP and Xstrata. COO Bret Thompson is an engineer with over 24 years' mining experience; he previously worked for De Beers, AngloGold and Ashanti Goldfields. Chief Exploration Officer Anton Esterhuizen is critical to the success of the projects. A geologist with 35 years' experience, Anton has had a string of world-class exploration successes, and received several prestigious awards for success in this field. Management is cost effective, with 88% of the about US\$28m costs to date spent in the ground.

Project	Summary
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Project	Equity	Comment					
		PILOT MINING					
Cassanguidi - Angola	33%	Pilot production and logistics base for DRC, target 100% equity and full mining by 3Q08					
	BULK-SAMPLING						
Dimbi - CAR	90%	Bulk-sampling, target pilot mining by 1Q08, full mining 4Q08					
Harts River - South Africa	74%	Second phase bulk-sampling underway, target full mining by 2H09					
Bakerville - South Africa	74%	Awaiting 2H07 LDD drill assays before taking to pilot mining, focus on potholes and 'runs'					
		ADVANCED EXPLORATION					
Longatshimo River - DRC	80-100%	Bulk-sampling in 1Q08, target pilot mining by 3Q08 and full mining by mid-2009					
Tshikapa River - DRC	100%	Bulk-sampling in 1H09. Area covers 100%-owned (12% royalty) and 60%-owned licences					
Bloemhof - South Africa	74%						
		RECONNAISSANCE					
Luebo - DRC	60%	Reconnaissance exploration complete, to continue development in 2009-10					
Kasai River - DRC	60-100%	Reconnaissance exploration complete, to continue development in 2009-10					
Etoile - CAR	90%	Field camps established, reconnaissance exploration underway					

Source: Pangea reports and listing document

The Central African Republic (CAR) hosts two projects — Dimbi and Etoile — where significant artisinal workings exist. In the CAR, a new mining code is in place, and the government is very much pro-mining.

**Dimbi (90%)**, in the south, lies on modern river beds and adjacent terraces and was bulk-sampled in 2007 with 4,500cts recovered. An area of over 1,000km<sup>2</sup> is considered prospective, although only 5% has been assessed in detail. The project will now be ramped up to pilot mining by the end of 1Q08, with the intention to shift to full production by 4Q08.

Target EBITDA in full operation is US\$13m pa, based on mining at 480,000m<sup>3</sup> pa, with grade of 35cphm<sup>3</sup> at a revenue of US\$140/ct. Capex is US\$11.5m (US\$5.5m has been spent so far) and opex is US\$22/m<sup>3</sup>.

**Etoile (90%)**, in the central northern CAR, is earlier stage than Dimbi. Exploration is underway, and field camps have been established.

The Democratic Republic of Congo (DRC) hosts four projects. Tshikapa and Longatshimo, the most advanced of these projects, are 70km from the Angolan border, where Pangea recently cooperated with the respective governments to erect a new border post.

The key step forward was the arrival of a 17 truck convoy in late-2007. The convoy, from South Africa, opened up supply routes, including a fuel supply route from Angola where diesel is considerably cheaper.

**Longatshimo (80-100%)** is scheduled to move to bulk-sampling in 1Q08. The goal is to upgrade to pilot mining by 3Q08, and then focus on resource delineation to allow commercial mining by 1H09. The resource lies on the Longatshimo River, and has potential for major expansion. For this reason geologists are actively investigating new resources to enable further ramping up of mining rates in the future.

The target EBITDA in full operation is US\$24m pa, based on a mining rate of 480,000m<sup>3</sup> pa, with ore grading 40cphm<sup>3</sup> at an average revenue of US\$175/ct. Capex is US\$11.5m and opex is US\$20/m<sup>3</sup>.

Schedule of Proje	ct Commissioning	l												
		2007 2008			2009			2010						
		Q4	Q1	Q2	Q3	Q4	Q1	Q2	03	Q4	Q1	Q2	Q3	Q4
CAR - Dimbi	Exploration Bulk Sampling Pilot Mining Mining Module 1													
CAR - Etoile	Exploration Bulk Sampling Pilot Mining Mining Module 1													
DRC - Longatshimo	Exploration Bulk Sampling Pilot Mining Mining Module 1													
DRC - Tshikapa	Exploration Bulk Sampling Pilot Mining Mining Module 1													
ANG - Cassanguidi	Exploration Bulk Sampling Pilot Mining Mining Module 1													
RSA - Harts River	Exploration Bulk Sampling Pilot Mining Mining Module 1													

Source: Pangea DiamondFields

Tshikapa (100%), which is close to Longatshimo, is the next project to be scheduled in the DRC. Bulk-sampling is targeted for 1H09.

Luebo (60%) and Kasai River (60%), also in the south-east of the DRC, are earlier-stage projects. Although ownership is at 60%, as for other DRC projects, potential exists to raise this to 100%.

Angola — Under the Diamond Act, the exclusive right to diamonds lies with Endiama, an 'arm's length' government body. However, Pangea's project is one of only two licences with 'old order' rights, which means Endiama does not have a direct interest, although it does maintain an 11% royalty. Diamonds must be sold to Sodiam, a subsidiary of Endiama.

**Cassanguidi (33%)** is an alluvial resource in north-west Angola. Resources have been outlined, but these are based on historic information and are difficult to quantify. A pilot mining plant is in place, and is processing at 15,000m<sup>3</sup> per month for 3,000-4,000cts per month.

Diamonds are sold to Sodiam, with recent negotiations improving prices paid. Once a commercially acceptable process is in place, Pangea aim to ramp up processing rates and potentially acquire the remaining 70% of the concession. The decision to move to commercial mining is expected in 1Q08, which would enable full mining by 3Q08. The target EBITDA in full operation is US\$4.6m pa, based on a mining rate of 420,000m<sup>3</sup> pa, with ore grading 22cphm<sup>3</sup> at an average revenue of US\$150/ct. Capex is US\$3m and opex is US\$22/m<sup>3</sup>.

South Africa is host to three operations, with legislation changes opening previously inaccessible properties, and company geologists confident they can delineate additional resources on new and historically mined areas.

**Bakerville (74%)** is currently undergoing bulk-sampling, with processing of LDD samples from 2H07 underway. The resource potential is still being assessed, but results to date are sufficiently beneficial to continue work on

the project. The focus is on both potholes and the runs that lead into the potholes, with grades of 500cpht and 5cpht, respectively.

Harts River (74%) is a buried river deposit on which the first phase of bulksampling is complete. Grade is typically 0.3cpht, but diamond values are around US\$1,500/ct. The company believes the prospect has potential for 500Mt @ 0.3cpht, but aims to delineate a subset of this at a higher 0.5cpht.

Bulk-sampling is continuing in 2008, and trial mining of equipment to process calcrete gravels (hard near-surface cap) is scheduled for 1Q08. A scoping study is scheduled for mid-2008 ahead of commercial mining, which could start as early as 2H09. The anticipated mining rate is at least 100,000tpm, but may be much larger.

#### Opinion

We have seen kimberlite exploration companies struggle against the long odds for discovery, and the long lead times to production. With a supply shortfall at current prices, we agree that prices, especially for larger stones common to alluvial deposits, are set to rise. The only logical 'stopgap' supply will be from alluvial operations, and Pangea is positioned to capitalise on this.

To date, the company has met most of its targets, and the large resources it has delineated suit the modular ramp-up approach outlined by management. When looking for sustained growth, most diamond companies come up short, but we think Pangea has done the hard yards and will now start to gain momentum.

#### **Investment Case and Recommendation**

**Investment Case:** Each Pangea operation provides a discrete cashflow that can be ramped up, while the portfolio approach mitigates risks inherent to both Africa and diamond exploration.

As an indicative valuation, we prepared a post-money (currently raising C\$15m), post-tax 12-month forward NPV<sub>10%</sub> valuation on the three most advanced operations only, Cassanguidi (assuming 66% minority interest purchased for US\$4m), Dimbi and Longatshimo, giving an NPV of £78m, or 66.5p/share including cash. Using grade, value and processing rates from company estimates, appreciating diamond prices at 2.5% in real terms, we modelled a ten-year mine life in each case, higher than current resources would suggest, but we are comfortable with this given the large resource potential at all operations.

Price Metrics for Pangea DiamondFields Based on Three Operations Only											
	2008E 2009E 2010E 2011E 2012E										
Carats mined	-	362,400	465,060	471,887	478,884						
Sales (£m)	-	31	42	43	45						
EBITDA	-	16	24	25	27						
EPS	-	0.06	0.12	0.13	0.14						
EV/EBITDA	-	3.5x	2.4x	2.2x	2.1x						
P/E	N/A	7.8x	4.2x	3.9x	3.7x						

Source: Ambrian estimates

**Recommendation:** N/A — Restricted period. Pangea DiamondFields is currently undertaking a fundraising on which we are a retained broker. As such, we issue no recommendation on this stock.

30 January 2008

# Petra Diamonds

## Price: 125p

Main Assets						
Project	Ct (m)	Grade (cpht)	US\$/ct	US\$/t	Interest	Stage
Cullinan - South Africa <sup>1</sup>	167	52.2	61.7	21.1	37%	Pending
Fissure mines - South Africa	4.9	97.6	211	206	74.5%-100%	Mining
Kimberley - South Africa	-	-	-	-	-	Restart
Koffiefontein - South Africa <sup>2</sup>	6.45	4.5	400	18.0	70%	Mining
Alto Cuilo / Luangue - Angola	-	-	-	-	36%/40%	Exploration
Kono - Sierra Leone	-	-	-	-	51%	Development

1: Mine 37Mcts @ 57.6cpht & US\$75/ct; Centenary cut 167Mcts @ 83cpht & US\$75/ct, remainder tailings + oversize 2: Mining at 8cpht and US\$400/ct u/ground, tailings lower grade and value. Source: Company data

#### **Company Description**

Focus and Strategy: Petra Diamonds is a pan-African diamond group with operations in South Africa, Angola, Botswana and Sierra Leone. Over the last few years Petra has grown from a junior explorer into a mid-tier producer with an attributable resource base (including Cullinan and Kimberley Underground) of 71Mcts. The company has four producing mines in South Africa, and reached agreement in 2007 to acquire a further two (Cullinan, Kimberley Underground).

The company's share price grew from 20p to 150p between 2003 and 2006, but faltered in 2007 following a string of acquisitions in a turbulent market. Deals included Xceldiam's Angolan diamond properties for a share-based deal worth £32.4m, the Koffiefontein mine in South Africa for a deal worth US\$11.8m, and an agreement to buy the Cullinan mine in a deal worth a total of US\$149m (Petra's share of consideration is US\$48m).

As exemplified by 2007, Petra's rapid growth has been partly due to an aggressive acquisition and JV strategy. This now leaves it with a wide portfolio of assets, although it has a minority share in some of these. This strategy has clearly worked for Petra, with diversification offsetting the long timeframes for development that have caused the share price of its single-asset peers to drift. Exploration and development funding from JV partners (eg, BHPB funding the Alto Cuilo JV) is also an advantage.

Petra is now set to become a top-10 diamond producer globally. Despite this, the company's share price fell by some 15% in January 2008 amid the turbulent market conditions and the threat of a US recession.

**Management:** Executive Chairman Adonis Pouroulis heads up Petra; a mining engineer with 15 years' experience, he founded the company in 1997. Johan Dippenaar, CEO, is a chartered accountant with over 15 years' experience in managing mining companies, previously as CEO of Crown Diamonds, acquired by Petra in 2005. Technical director Jim Davidson, also from Crown Diamonds, is a geologist with over 20 years' experience in mine management. David Abery, FD, is a chartered accountant with extensive experience in both South Africa and the UK.

#### Upcoming Events:

Interim Report (Feb '08) Financial year end (Jun '08) Cullinan acquisition completes (2008) Kimberley acquisit'n completes (2008) Alto Cuilo bulk-samples (2008) Kono development decision (mid-'08)

Market cap	£230.0m
Ticker	PDL LN
EV / in-situ value EV / 08E revenue	3.6% 7.5x
Cash in hand (£m)	27
52 week (p)	
High Low	166.5 120.0
	120.0
3M-avg. daily vol. (000s)	338
3M-avg. daily val. (£000)	143
Shares	
Basic	184.0m
Fully diluted	203.0m
Top shareholders	
Saad	28.7%
JP Morgan	9.97%
Al Rajhi	7.7%
Management	6.1%
Total	52.4%



Source: Fidessa

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#### **Project Summary**

Project	Equity	Comment	
PRODUCING			
Cullinan diamond mine - South Africa	37-60% <sup>1</sup>	Large producing mine, major overhaul and development ahead	
Fissure Mines - South Africa	74.5-100% <sup>2</sup>	Producing kimberlite fissure mines generating solid cashflow	
Koffiefontein - South Africa	70%	2007 acquisition, first sales in July '07, currently ramping up	
Kimberley Underground - South Africa	74%	Acquisition to complete in '08, now operated by Petra under care & maintenance	
		ADVANCED EXPLORATION	
Alto Cuilo - Angola	9-36% <sup>3</sup>	Attractive kimberlite field in Angola being developed in BHPB JV	
Kono - Sierra Leone	51%	Fissure mine JV with potential for 2010 production	
		EXPLORATION	
Luangue - Angola	29-39% <sup>4</sup>	Prospective kimberlite and alluvial licence adjacent to Alto Cuilo	
Kalahari Diamonds - Botswana	100%	Largest exploration landholding in Botswana	
		OTHER	
Calibrated Diamonds	100%	Cutting and polishing business acquired in 2006	

1: 60% conditional on certain payments; 2: Two mines at 100%, one at 74.5%; 3: Potential dilution from JV and government, 4: On BHP buy-in; Source: Company reports, Ambrian

**Cullinan (37%)** is a producing kimberlite mine in South Africa; Petra announced the purchase in November 2007, with a consortium (Petra – 37%, Al Rajhi Holdings – 37% and BEE partners – 26%) paying US\$149m (Petra US\$48.4m). The parties provided US\$200m to fund the acquisition and development, and Petra has the option to increase to 60% ownership through repayment of a component from Al Rajhi from mine cashflow.

De Beers will operate the mine until the conditions precedent have been met. After taking over the operation as a going concern, Petra will review the mining process. The mine has averaged 1.45Mcts pa for the last ten years, with average grades of 43.6cpht, although low-grade sections of the orebody mined from 2002 through 2005 averaged only 30cpht. The existing operation has reserves in place to support production of over 1Mcts for at least 20 years based on existing mining models.

Beneath the Cullinan mine lies the world's second largest indicated resource by in-situ value — the Centenary Cut, estimated by De Beers at 133Mct @ 83cpht. The Centenary Cut goes to a depth of 1,110m, some 250m deeper than existing workings. The method of access to the ore is not yet finalised, with capex estimates well over US\$500m if the company decides to undercut the zone and block cave with two shafts.

**Fissure mines (74.5-100%)** include Helam, Sedibeng and Star, all acquired with merger with ASX-listed Crown Diamonds in June 2005. The combined reserve of all three deposits is 3.5Mt @ 64cpht, with a resource (including reserve) of 5.0Mt @ 97.6cpht for 4.9Mcts total contained diamonds. The mines target narrow fissures of kimberlite, which can be as narrow as 0.5m, but extend over several kilometres.

*Helam (100%)*: 80,000ctpa historically, 110,000ctpa targeted by 2009, US\$75-90/ct. *Sedibeng (74.5%)*: 40,000ctpa historically, 50,000ctpa targeted by 2009, US\$260-350/ct. *Star (100%)*: As high as 60,000ctpa historically, 20,000-30,000ctpa targeted, US\$180-250/ct.

Koffiefontein (70%), an operating kimberlite mine in South Africa, was acquired from De Beers in July 2007. De Beers recovered 6.2Mcts between 1987 and 2005, closing the mine at that time. The reserve is

24.4Mt @ 4.4cpht for 1.08Mcts, and the resource (including reserve) of 143.1Mt @ 4.5cpht for 6.45Mcts should support a mine life of 15 years.

Since acquisition the company has achieved US\$408/ct, including two 60ct+ stones that sold for a combined value of US\$1.75m. This compares with De Beers' historical production of US\$245/ct. The company is targeting 92,000ctpa at US\$400/ct, with additional subsidiary ore feed from tailings.

Kimberley Underground (74%) is an operating mine near Kimberley in South Africa. In September 2007 Petra announced a conditional agreement to acquire the mine from De Beers for US\$11m, with additional environmental obligations of US\$8.9m, following in the footsteps of the Koffiefontein acquisition.

Petra is targeting annual sales of 100,000ct pa at US\$160/ct for US\$12m attributable revenue over a mine life of at least 12 years. Unlike Koffiefontein, construction of a new plant is required at Kimberley, the design and construction of which is being undertaken in-house. Petra aims to commence production in the financial year ending June 2009.

Alto Cuilo (9-36%) is a JV with BHP Billiton whereby BHPB can acquire 75% on expenditure of US\$60m. Since 2004 BHPB has spent over US\$50m. The area hosts a kimberlite field with 77 identified kimberlites from 99 targets. A major mini bulk-sampling programme is underway with a DMS plant treating samples on site.

The largest discovery to date is AC98 at 175ha (by comparison Orapa is 11ha and Jwaneng is 45ha). The pipes are predominantly diamondiferous, with 13 of the 15 tested so far containing microdiamonds. First mini bulk-samples returned encouraging results of 90m @ 32cpht (including 30m @ 35.5cpht) at AC63 and 90m @ 11cpht (including 33cpht over 33m) at AC98. LDD and a detailed gravity survey are underway to understand further the geometry of these large pipes and the overlying crater facies.

Kono (51%) is a JV with Stellar Diamonds, a 65.8% subsidiary of Mano River Resources. Petra earned in through expenditure of US\$3m and manages the project. The project hosts several kimberlite fissures, with initial indications of long strike lengths and potential for 100cpht. Following bulk-sampling, the company is now undertaking trial mining from three shafts to establish the parameters required for a scoping study, ahead of the development decision planned for mid-2008.

Luangue (29-39%), the concession adjacent to Alto Cuilo, was acquired in the takeover of Frannor, a wholly-owned subsidiary of Xceldiam. In August 2007 BHPB took a 25% stake in Frannor for US\$22.3m, with earn-in rights for 75%. The area is prospective not only for kimberlite discoveries, but also contains significant alluvial resources, with 2,000cts returned to date including a stone of 18.3ct. The first step will be geophysics, followed by a drilling and sampling programme similar to Alto Cuilo.

**Botswana exploration (100%)** is undertaken on a 52,000km<sup>2</sup> area, acquired through the acquisition of Kalahari Diamonds. There are 30 known kimberlites on one property (Gope kimberlite field). Other advanced targets are the DK4 and DK6 kimberlites near to Jwaneng, and the 173S pipe which may be up to 25ha in size. Exploration is supported by BHPB, which has 51-60% earn-in rights (on various properties).

**Calibrated Diamonds (100%)** is a cutting and polishing business acquired in November 2006, which uses a proprietary laser technology to cut and polish diamonds to a very high and consistent standard.

#### Opinion

Petra's acquisition of Crown Diamonds in 2005 was the first of a string of acquisitions that have grown the company into a diversified diamond group. Petra has proven its capabilities as underground 'hard-rock' miners (both fissure and kimberlite pipe) and through JVs and acquisitions has reached the required credibility and critical mass to capitalise on both new and existing opportunities — benefiting most notably from De Beers' strategic decision to divest certain assets in South Africa.

We think the minority interest on some assets is a positive. This willingness to JV has not only allowed Petra to grow at a much faster rate than its peers, but has also given it access to specialised staff through acquisition of working operations and JVs with technical leaders. In Angola, we think the minority interest and potential of government dilution are more than offset by the sheer volume of kimberlites found to date, which Petra would probably have struggled to develop alone. The success of the Angolan JV has the potential to be replicated in Botswana.

Historic expertise in fissure mining now spans underground kimberlite pipe mining, and kimberlite exploration. The acquisition of three kimberlite mines in quick succession set Petra up in this arena. In particular, the decision by the company to carry out plant design and construction at Koffiefontein shows the confidence held by management in the internal skill set available. As with Koffiefontein, Petra is currently operating Kimberley Underground under care and maintenance until the acquisition officially completes — the company can use this time to gain experience of the mine and deposit. However, Petra will not have the chance to examine operations so thoroughly at Cullinan ahead of completion as the mine is currently producing as normal under De Beers.

Cullinan brings with it major challenges of its own, and is easily the biggest task Petra has taken on to date. A major improvement plan is scheduled for the plant, development will be required to access the Centenary Cut, and the block caving required is never easy, although Petra will block cave on other operations at Koffiefontein and Kimberley. It could be several years before the benefits of Cullinan flow through to the bottom line, and there is certainly risk that Petra could fail here.

#### Investment Case and Recommendation

**Investment Case**: Petra has, in our view, an ideal set of assets to provide organic growth. There is steady-state production from existing assets, a suite of mines with value-add from rebuild, restart or overhaul, some very prospective advanced exploration in Angola, and grassroots exploration in Botswana. In combination this should provide an excellent growth platform in the medium-to-long term.

**Recommendation:** Petra is the clear leader in the mid-cap diamond space on AIM. Investors shouldn't expect a smooth ride as we foresee significant growing pains around the kimberlite operations, and the development of Angolan and Sierra Leone assets to be slow. That said, the company's organic growth opportunities should more than outweigh these difficulties, and we remain positive on Petra in the medium term.

### Appendix 1 — Country Reviews

#### Australia

Based on ancient bedrock, diamond exploration began in 1972, with a kimberlite pipe discovery coming in 1976 in the Ellendale area. In 1979, a large lamproite pipe was found and named the Argyle mine; by 1992 over 200mct had been mined there. Only 5% of the production is gem quality. A unique feature of the Argyle mine, though, is a small but consistent supply of valuable pink to red or purple diamonds.

Australia owes its position as one of the world's top producers to Argyle (Rio Tinto), its flagship mine in Western Australia and its only major diamond mine of consequence. Output fell markedly in 2004 from a previous level of 30-31mct pa, equal in carat terms to Botswana and Russia, but has since recovered. Production will now slow as the mine moves underground to extend its life to 2018, and as a result Australian production is expected to halve. Its natural pink diamonds are marker stones for the industry, but the bulk of production is cheap and cheerful (cuts to below one carat) that goes into the Indian market. The overall quality of production will, however, improve in part due to fewer Argyle stones but also as a number of smaller, higher-grade mines come on stream. The Ellendale operation comprises two economic kimberlite pipes currently being mined, and seven pipes under evaluation. The combined resource is 107.5Mt @ 5.8cpht and US\$155/ct, and production is currently 450,000ct pa with expansion underway.

#### Botswana

The discovery and exploitation of diamond resources in the early 1980s propelled Botswana into the limelight. The country is politically stable and has a low population base. Its relationship with De Beers, in both the mining and marketing of diamonds, is the cornerstone of that success.

Botswana's three mines, Jwaneng, Orapa and Letlhakane, are owned and operated by Debswana, a 50:50 joint venture between De Beers and the Botswana Government. It produces about 19% by volume and 27% by value of the world's output. A fourth mine, Damtshea, began production in 2002. Botswana's mines are long-life and high-grade. The average value per carat is US\$84 compared with Australia's US\$14.

There is an active junior exploration programme, but key issue for any explorer is the Botswana Government's right to take 50% equity in any discovery. While Diamonex, with its around 13Mct resource, avoided this probably because of its size, expectations are that the government will only take up 0-20% in all but the largest of future projects.

#### Brazil

Brazil is one of the world's largest countries and by far the largest in South America with an area of 8.5m km<sup>2</sup>. Under civilian rule since 1985, it is increasing in prosperity through the pursuit of mining, general industry and agriculture. The country has large reserves of oil and natural gas. The concentrations of population and industry are on the Atlantic seaboard, particularly in the south which hosts the major cities Rio de Janeiro and São Paulo. Although one of the earliest diamond producers, its present output is small, mostly from alluvial diggings by artisinal miners. Several companies are involved in diamond exploration, including River Diamonds and Brazilian Diamonds. A lack of infrastructure and access to the interior makes progress slow and expensive - work is concentrated on alluvials, although kimberlites have been discovered. The prime target areas are in the southern state of Minas Gerais.

Two important Brazilian companies, the state-owned Codemig and RMN Ltda, are joint venturing with others in alluvial dredge mining. It is of note that De Beers has become a significant shareholder in Brazilian Diamonds following its sale to it of an extensive exploration database.

#### Canada

Canada now has three world-class mines: Ekati (BHPB), Diavik (Rio Tinto) and Snap Lake (De Beers). Two more are at or near the development stage: Jericho (Tahera Diamond Corp.), and Victor (De Beers). Of the more than 600 kimberlite pipes so far discovered in Canada, most are in the far north: the North West Territories and Nunavut provinces.

Canada has been the leading diamond exploration region worldwide for the past decade, offering political stability, a reasonable internal tax regime, and ready, unhindered access to the US and European markets. However, costs are high compared with Africa.

#### Finland

Finland is Europe's fifth largest country and one of its most northerly. It shares with Russia a long eastern border which cuts through the diamondiferous Karelian Craton.

On the Russian side, the Karelian Craton is host to some major diamond occurrences and there is no reason to believe that similar discoveries will not be found in the Finnish sector. Despite a much smaller country land mass, the Finnish part of the Karelian Craton is similar in size to the Slave Craton of Canada, now host to the world's third largest mining concentration. These factors have given rise to an intensification of exploration activity, spearheaded by companies including Kopane Diamond Ventures, Sunrise Diamonds and Nordic Diamonds.

Finland offers a favourable investment and operating environment for exploration and mining, and infrastructure is well developed, with allyear port facilities plus a good network of roads and power transmission. The government is actively promoting mining.

#### India

Diamonds were discovered in India by the  $4^{th}$  century BC and — except for a minor supply of diamonds from the Kalimantan deposits of Borneo — dating from the  $6^{th}$  century India was the world's only source until the 1730s.

In addition to its many diamond stories, India has produced a number of truly legendary diamonds including the Koh-i-Noor, the Orlov, the Hope and the Sancy. Most production has been alluvial but today the Majhgawan pipe, a primary source near Panna, is the country's only commercial mine.

#### Russia

The greatest success story of diamond exploration in the 20<sup>th</sup> century is Russia. In the 1930s, similarities were recognised between Siberia and South Africa / Botswana. In the 1950's several discoveries were made, which grew to over 500 by 1960. By 1970 Russia had become the world's third-largest producer.

With the disclosure of sales volumes and prices being forced upon it under the Kimberley Process, Russia caught the industry unawares. Its volumes of exports were about 40% higher and its price realisations per carat 40% lower than had been estimated. It now ranks alongside Botswana, the two producing over 40% of all the world's diamonds. Production and marketing are dominated by Alrosa, the monopolistic state enterprise that has close links with De Beers.

The reason why Russia, with a landmass greater than Australia, Canada and South Africa combined, produces only its current volume probably lies more in its reluctance to allow outside investment in the sector than in geology. Added to which there are certainly incidences where state, or 'oblast', boundaries, not geology, have been the limiting factor on exploration and development.

#### South Africa

Now the world's fifth largest diamond miner, South Africa dominated the industry for over a hundred years. Recent annual production, at around 15m carats, is more than 25% ahead of its output ten years ago.

This has come largely as a result of revitalising old mines (kimberlite production accounts for almost 90% of total production), increased alluvial mining (approximately 1.5m carats pa) and reprocessing tailings. However, huge changes are sweeping the country's fourth largest mining activity. They include:

- A strong currency. The Rand's strength, increasing working costs, and both high inflation and borrowing rates are at odds with a weak US dollar, in which currency the product is sold.
- Old, underground mines beset by the problems of working at depth in difficult conditions.
- Black Economic Employment (BEE) legislation, which offers a serious disincentive to external investment (see below).
- The commercial, political and geological attractions of nearby Botswana – and perhaps also Namibia and Tanzania – offer more investor-friendly terms to investors.
- De Beers. The company that made South Africa number one in diamonds and still dominates the market is both wary and wise. The majority of its output and earnings now come from Botswana. The largest fraction of its exploration spend is in Canada, where it is developing major new mines.

#### Namibia

Whilst producing only around a fraction of world output, Namibia is important on several counts. Sitting on the west coast of Southern Africa, it has both onshore and offshore resources, each indicating large potential. Its quality, at over US\$300 per carat, dwarfs the world average of US\$68. The industry has a healthy mixture of De Beers and government in joint ventures, plus a host of juniors. With a large landmass and low population density, it remains economically close to its neighbour South Africa.

#### The Conflict Regions

In all exploration there is a balance to be struck between political risk and geological risk. In Africa's former conflict regions (Sierra Leone, Liberia, the Democratic Republic of Congo (DRC) and Angola) there are compelling geological reasons for the shifting political sands to be viewed as an opportunity for the fearless rather than as a barrier to entry.

With the overwhelming contribution from the DRC, annual output from these countries is estimated to be 35mct, or 25% of global production. However, while the DRC is credited with 27mct, roughly 80% is cheap, low-grade, industrial quality. Thus, the impact on the gem market from these countries is probably no more than 4%.

This could be dismissed as insignificant were it not for several factors:

- Most production is alluvial, which raises the question of source: are there large kimberlites to be found?
- Despite the production statistics, there has been very little modern exploration. They truly are frontier countries.
- The immense damage that the trade in so-called 'conflict' or 'blood' diamonds has wreaked on these countries and their populations has significantly raised the stakes for responsible exploitation.

#### Angola

Ravaged by civil war since the withdrawal of the Portuguese in the 1970s, Angola represents one of the major and largely untapped sources of diamonds in the world and has the potential to become one of the world's top five diamond producers.

The most prospective exploration areas are Lunda Norte and Lunda Sol, on the north-east border with the DRC, and the Cuanza River region in the west of the country. A particular characteristic of the Lunda region is the north-flowing Kwanago, Chicapa and Luachimo rivers whose alluvial deposits appear to combine the re-working of the diamondiferous Calonda Formation with the direct weathering of kimberlites, making them particularly rich.

A peace of sorts returned to Angola in 2002 and with it an increase in alluvial mining. Some sources claim that annual output is already at 8mct, but much is smuggled out into the neighbouring DRC to escape the equity demands and marketing control of the government mining company Endiama.

Despite the country's war-torn infrastructure, high incidences of unexploded ordinance and bureaucratic process, companies already active in Angola include De Beers, BHP Billiton, Alrosa, and Trans Hex.

Typical joint-venture arrangements are for Endiama to retain a 34% interest, an Angolan partner 33% and the foreign investor 33%; the exception being a 51%/49% split with De Beers. Despite these stipulations, multinational companies have rushed in to establish a presence.

#### Liberia

This relatively small, coastal West African nation has all the problems associated with the poorer countries of Africa: an unsustainable birth rate, low life expectancy, poor infrastructure, a difficult climate, and an economy largely destroyed by civil war. After two years of transitional government, democratic elections in late-2005 brought a stability of sorts, closely monitored by the UN. Sanctions are in force against the export of timber and diamonds.

Liberia has been a diamond producer for many years and remains a prospective target despite its current problems. Although its output has been traditionally alluvial, much of the country is covered by one of the larger African cratons. Unrest has not deterred some companies from becoming engaged. Amongst them, AIM-listed Mano River Resources and Trans Hex have a joint venture targeting a proven kimberlite pipe, the KPO, north of the capital city Monrovia, and a small alluvial prospect due on steam in 2006.

Diamond Fields of Canada has announced two comprehensive projects in a joint venture with local firm Ducor Minerals. It is very early days for the re-establishment of this country with commensurate ratings for companies exploring there. Not the least of its problems is the suspicion that its declared exports, via the Kimberley Process, far outweigh its believed output. That said, the country has recently been Kimberly Process approved, and will likely undergo a renaissance similar to Sierra Leone and Angola.

#### Sierra Leone

Ravaged also by civil war, Sierra Leone is attempting a return to normality, and there is a rapidly increasing presence of juniors (Diamondworks Ltd, Mano River Resources, African Resources, River Diamonds, West African Diamonds). The prospectivity of the country is outweighing the logistical difficulties and political risk, and we only see this growing.

#### Democratic Republic of Congo

Possibly the richest source of diamonds on the African continent, the DRC is attracting back explorers and developers. A new investor-friendly mining code in 2003 and increasing stability after years of civil war have sparked a rush to acquire licences.

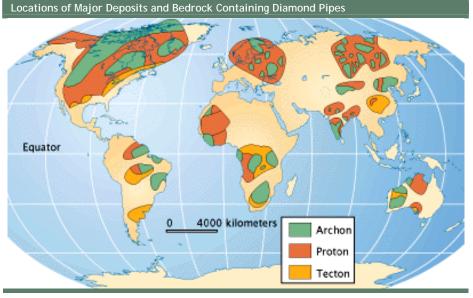
The pattern appears to be of majors making carefully distanced deals with juniors involving option agreements and buy-ins should diamond finds result. Logistical difficulties are one of the biggest hurdles, but companies such as Pangea DiamondFields<sup>4</sup> and Gem Diamonds are now seeking to establish major operations in the country. The richest central parts of many river beds have been mined out, and there are major resources located in terraces and river flanks.

<sup>&</sup>lt;sup>4</sup> Ambrian acts as broker to this company

### Appendix 2 – Geology

#### Where are Diamonds Found – and Why?

The factor that governs the location of kimberlites is the thickness of old rocks located at the core of continents. The map shows the location of ancient bedrock that contains the diamond pipes: divided into the +2.5 billion-year old archons ('Archaean rocks') and less productive 1.6-2.5 billion-year old protons ('Proterozoic rocks').



Source: American Museum of Natural History

#### Types of Diamond Deposit

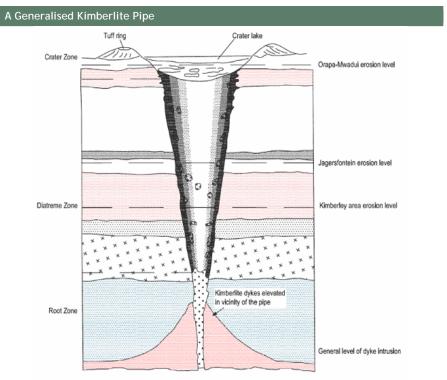
Geologic processes create two basic types of diamond deposits, referred to as primary and secondary.

#### **Primary Sources**

Primary sources are the kimberlite and lamproite pipes and dykes that raise diamonds from the Earth's mantle where they originate. These pipes and dykes occur in clusters within which the spacing is typically at the most tens of kilometres apart. Kimberlite and lamproite are similar in composition: a mixture of rock fragments from the Earth's mantle, large crystals, and the crystallised molten rock ('magma').

Kimberlite and lamproite are not the source of diamonds, only the elevators that bring them with other minerals and mantle rocks to the Earth's surface. The conditions under which diamond may be formed define the co-called 'diamond stability field' and it is necessary for them to rise quickly to the surface so that the carbon does not re-crystallise.

Due to this rapid ascent, primary deposits have a dominant vertical dimension and a relatively small surface area. The characteristic carrotor bowl-shaped cross-section of pipes and dykes arise from a combination of the rapid ascent and the volatilisation of the volatile compounds in the magma, giving rise to very explosive eruptions. The size of a kimberlite is rather small. Its surface covers an area between less than 0.5 hectare and 150 hectares. A kimberlite is composed of three parts: the roots, the diatreme and the crater.



Source: KimCor Diamonds (www.kimcordiamonds.com)

Located at about 2-3km below the surface, the roots make up the bottom part of the kimberlite pipe. Their shape is irregular with a vertical extent of about 0.5km. The diatreme consists of the middle part of the kimberlite and contains the bulk of the pipe. This is where most of the diamonds can be found. The vertical extent is about 1-2km. The crater is the upper part of the pipe, located at the surface.

Although the flared top of a pipe or dyke can yield substantial quantities of diamonds, following the narrowing structure downward eventually becomes unprofitable. The depth of erosion is therefore important to the economic viability of a kimberlite. South African kimberlites typically have little or no crater remaining, whereas those in Botswana, for example, frequently have an intact crater facies.

#### **Secondary Sources**

Secondary sources are created by the weathering and erosion of the primary sources. These processes break up the primary sources and move surface minerals — including diamonds — from the pipes by gravity, in streams and rivers to the sea. Because diamonds are dense, diamonds concentrate at the bottom of active zones of moving sand and gravel. River deposits are referred to as 'alluvial' and coastal deposits as 'marine'.

The presence of an alluvial secondary deposit implies the existence of kimberlite pipes upstream in the drainage area. In North America, however, this conclusion does not apply because the advancing glaciers have dispersed the material.

Some secondary deposits are formed on top of, or adjacent to, the primary deposit.

Although the relationship between primary and secondary deposits may be obvious, there are many instances where secondary deposits are found far from an apparent means of transport, in the fossilized channels of rivers ('palaeo-channels') and beaches, or with no obvious source.

#### **Indicator Minerals**

Rocks are defined by the minerals from which they are made. Certain minerals present in kimberlite and lamproite rocks not only define those rock types, but variations in their composition are also indicative of whether or not the rock has come from the diamond stability field.

Some of these minerals, being resistant to weathering and denser than quartz sand, are concentrated by erosion and deposition. As they occur in far greater abundance than diamond, exploration geologists look for these 'indicators'.

- Indicator minerals for diamond include, in order of decreasing significance: garnet, chromite, ilmenite, clinopyroxene, olivine and zircon.
- The order of persistence in most depositional environments is: zircon, ilmenite, chromite, garnet, chromian diopside and olivine.

#### Evaluation of the Diamond Content of a Kimberlite

Kimberlites are not all diamond-bearing or economically viable. When a kimberlite is found, it is necessary to evaluate its diamond content: concentration (usually carats per hundred tonnes, or 'cpht'), the size of the deposit, and also the size and the quality of the diamonds. These two last characteristics are important to know because, in the diamond mining industry, the product is valued in terms of individual pieces.

In a kimberlite there is a relationship between the quantity of diamonds and the abundance of fragments from the mantle host rock where diamonds form. To determine diamond content, tonnes of rock are collected from the top of the pipe and processed. If diamonds are found, drilling and petrological examinations will give the extent of the deposit and information about the diamond content. Between 5,000 to 10,000 carats of diamonds are needed to evaluate a deposit fully.

#### Mining

Mining of a diamond-bearing pipe starts with the excavation of a pit into the pipe. In this process, called 'open-pit' or 'open-cast' mining, the initially loose and eventually hard ore material is removed with large hydraulic shovels and ore trucks.

Hard rock is drilled and blasted with explosives so the broken material can be removed. When deep ore warrants it, mining goes underground with vertical shafts descending to horizontal drifts that enter the pipe.

Adjacent to the pipe, shafts are sunk and drifts are tunnelled into the pipe. Block caving occurs where kimberlite is drilled and blasted to cave in a section above tunnels and the broken kimberlite falls through the draw points and is then conveyed up the vertical shaft for processing.

#### Processing

Once a mining operation yields ore, the diamonds must be sorted from the other materials. This process relies primarily on diamond's high density. An old but effective method is to use a washing pan, which forces heavy minerals like diamond to the bottom and waste to the top. Cones and cyclones use swirling heavy fluids mixed with crushed ore to achieve density separations. With 99% of the waste in the ore removed, further separations may use either a grease table or an x-ray separator. Final separation and sorting is done by eye.

The x-ray separator system acts on a thin stream of particles from the concentrate accelerated off a moving belt into the air, where they encounter an intense beam of x-rays. Any diamond fluoresces in the x-rays, activating a photomultiplier that triggers a jet of air, deflecting the diamonds into a collector bin.

#### Marine Diamonds

Marine deposits are a variation on alluvial deposits. They result from the wave action of the ocean, which has concentrated diamonds at the base of the surf zone. Waves arriving at an angle to the coast tend to push the diamonds along the coast, causing the diamonds to stream out from where rivers deposited them at the coastline.

There are three types of marine mining operations. In one, sand is moved from ten meters below sea level to as far inland as the sea may have risen in order to reveal the concentrations on the bedrock. In another, divers and boats work in the surf zone to perhaps 20 meters of water and use suction pipes to remove gravel and diamonds from the ocean floor. In the third, deep-sea marine vessels use remote underwater tractors or excavators to remove overlying sediments and extract the diamondbearing sand and gravel. Processing is done on land or shipboard.

#### Alluvial

Most of the diamond deposits first discovered were alluvial – concentrations in streambed or riverbed sand and gravel. They are still actively exploited in many ways, from the most primitive to the highly sophisticated. The goal is relatively simple: to find a location where moving water has deposited diamonds in the bottom of a channel, possibly in a pocket or cleft. As rivers meander and drainage can change, fossilizing a once active river, the search for alluvial diamonds requires some geological knowledge and a lot of luck. The process involves removing the overlying barren ground, digging up the bearing ground, extracting the diamonds, and, nowadays, restoring the landscape when finished.

In the bigger operations, large earth-moving equipment transports the alluvium, and the processing approaches that of the primary mines — coarse sieving, then rotary sieving in a trommel, before loading into a large washing pan. Final processing includes concentrate sieving, a picking table, and usually a grease table. Of course, no crushing is required.

#### Gem and Non-gem Production

Broadly, the split worldwide of non-gem (industrial and near-gem) and gem quality diamond production is between 50:50 and 60:40.

### Appendix 3 – From Exploration to Mining

#### **Exploration**

Stage 1 (1-2 years)

Detailed ground follow-up of magnetic anomalies and indicator mineral trails by ground magnetics, closely spaced indicator mineral sampling, drilling and trenching, to locate individual kimberlite pipes in the kimberlite province.

Kimberlitic Indicator Minerals are minerals formed together with diamonds at depths of 150-200km, and include pyrope garnets, ilmenites, chrome-diopsides and chromites. These minerals are more abundant than diamonds and are therefore more easily detected in samples taken in the rivers downstream of the pipes. For this reason they are called kimberlite indicator minerals and are an important exploration tool.

#### Evaluation

#### Stage 2 (6 months) - Testing the Pipe for Diamonds

After the discovery of a kimberlite pipe the most common initial test to determine if a pipe is diamondiferous is to assay a rock sample for the presence of microdiamonds. A microdiamond is a diamond less than 0.4mm in size (less than 0.001 carats in weight) and is only of geological importance (these microdiamonds are not recovered by commercial diamond mining operations). Microdiamonds are recovered by dissolving about 50-100kg of rock in a hot caustic solution by a commercial laboratory. Most (not all) economic diamond mines have significant numbers of microdiamonds. Some economic pipes and dykes (ie, pipes counting sufficient quantities of macro-diamonds) have no, or very minor, amounts of microdiamonds.

Although microdiamond analysis gives an initial indication of the economic potential of a pipe, it is the macro-diamond size distribution and the diamond value that ultimately determines its economic value.

It is widely thought that the microdiamonds form part of a continuous size distribution from large to small diamonds, but research has not conclusively proven that they are part of the same size distribution, and not merely a mix of independent microdiamond and macro-diamond sizes.

It is becoming increasingly common to quote the ratio of microdiamonds per 100kg of rock and the ratio of microdiamonds to macro-diamonds. In Canada, a rule-of thumb is to recover at least one microdiamond larger than 0.1 mm per kilogram of rock and one macro-diamond (>0.5 mm) per 10kg of rock to indicate economic potential.

#### Stage 3 (up to 12 months)

If microdiamond results are promising, bulk testing of the kimberlites is undertaken to assess the grade and value of commercial-sized diamonds.

**Mini-bulk-sampling** by large diameter drilling (LDD) is the first stage. Recovery of macro-diamonds is typically undertaken in a plant constructed for the purpose, which gives a preliminary grade estimation.

**Bulk-sampling** is the next stage where companies target at least a 2,000 carat parcel for reliable valuation of US\$/carat. This needs at least 10-100 tonnes, for example. Usually sample processing is done via a dense medium separation plant (DMS or HMS), jig or diamond pan.

#### Grade Estimate

The estimation of diamond grade is the process of determining the average weight of diamonds per unit mass or volume of source rock. The diamond weight is a function of the number of the number of diamonds and the size of these diamonds. The average or mean stone size of recovered diamonds is obtained by dividing the total carats by the number of diamonds. A sample size that returns about thirty diamonds will give a 'statistically significant' result but this may be impractical at the early stages of an evaluation programme.

In a preliminary sampling programme, where there is no past data on the grade of the deposit, a useful starting point is to use the world average grade for commercial diamond mining operations as follows:

- average grade of 50 carats per hundred tonnes (cpht),
- average diamond size of 0.1 carats per stone (ct/st) and
- average diamond value of US\$50/ct.

With this 'guesstimate' of the diamond grade and size, the number of stones per unit volume (or mass), the 'stone density' in stones per cubic metre (st/m<sup>3</sup>), or stones per tonne (st/t), can be calculated. Using the relationship above and the world's average data, then the following can be derived:

- Stone Density = (Grade/Av Stone Size) per unit volume or mass,
  - therefore if the Grade = 50 cpht = 0.5 carats per tonne (ct/t),
- and the Mean Stone Size = 0.1 ct/st,
- then the Stone Density = 0.5/0.1 = 5 stones per tonne.

The results indicate that, on average, in the above example, five diamonds should be recovered from each tonne of processed source rock. To recover 30 diamonds, six tonnes of source rock would have to be processed.

#### Stage 5 (from a few months to 2 years)

If average value content seems better than US\$40/t and near-surface tonnages exceed several million tonnes, a pre-feasibility study may start, with more drilling, delineation drilling, geotechnical drilling and more bulk-sampling to firm up tonnages, grade and value (resources) estimates.

#### Stage 6 (time for permitting is largely independent of the company)

Full feasibility study and permitting (environmental, legal, etc), with detailed mine planning.

Stage 7 (1 year for an open pit or up to 2 years for underground)

Mine and plant construction, infrastructure works.

#### Stage 8

Between four (for an open pit in an accessible location) to ten years (for a remote location or underground mine with significant development required) from the initiation of exploration, production should commence.

### Appendix 4 — Valuing Diamonds

Diamond value is based on the four 'Cs': colour, clarity, cut and carat.

#### Colour

Colour classification is determined by comparing the diamond to a set of master colour stones. The rarest and most sought after colour in a diamond is colourless, often called 'blue white'.

#### Clarity

During the crystallisation of a diamond traces of non-crystallised materials may be trapped within it. These imperfections are called inclusions and can be of various colours, transparent (gaseous bubble), black (carbon), green or brown. Some are more obvious to the eye than others and this is taken into consideration when grading the stone.

If an imperfection is too large or too coloured it can interfere with the brilliance or sparkle of the diamond. The size of the imperfections go from 'Flawless' (IF or F) to 'P3' (pique) or 'I3' (inclusion3).

#### Cut

It is the precision of the cut that determines the sparkle of the diamond, referred to as its 'life' or 'fire'. When the diamond is cut to good proportions, with mathematical parameters followed correctly, light will be perfectly refracted through the cut faces, or facets, to give maximum sparkle. The cut should not be confused with the shape of a diamond.

#### Carat Weight

The weight of a diamond is expressed in carats. There are 5 carats in one gram. The carat weight is divided into points, there are 100 points to the carat. A quarter of a carat is called a 'grain' (0.25ct.)

#### Putting it All Together

As with all gemstones, for equal quality, price is exponential with size or weight, as shown below. The vast majority of stones are either white or a close shade. These are recognised alphabetically in ascending order, with most falling into the G, H, I and J bands. Inclusions are graded VS (very slightly included) or SI (slightly/small inclusions). Typical prices for a one carat round cut (in US\$ to a retail store) are show in the table below.

Prices for a One Carat Brilliant Cut Diamond (retail, February 2008)				
	IF	VS1	SI 1	I 1
D Colour	US\$24,000	US\$10,500	\$7,500	\$4,500
F Colour	US\$10,000	US\$8,500	\$7,000	\$4,300
H Colour	\$8,500	US\$7,200	US\$5,00	\$3,700
J Colour	\$6,500	US\$5,500	US\$4,800	\$3,200

Source: OriginalDiamonds

Fancy, natural colours, particularly blues and pinks, command large premiums over whites. The ability to induce artificial colours and, in particular, to transform hitherto un-saleable browns is a concern to the market.

### Appendix 5 — Changing Market Dynamics

#### **Changes in Selling Practices**

Simply put, a 'sight sale' is the term used by the industry when the De Beers Diamond Trading Company (DTC) offers uncut diamond rough for sale to a specific list of diamond manufacturers on a specified timetable. These manufacturers are the 'cutters' who produce the diamonds that are offered for sale on a Private Reserve. The diamond manufacturers authorised by the DTC to buy diamond rough at the sales are known as 'sight holders'. At the beginning of 2003 there were approximately one hundred sight holders authorised to buy diamond rough from De Beers; however, the DTC changed its marketing strategy in June 2003 and initiated its 'Supplier of Choice' (SOC) programme, revoking the charter of many of the sight holders. The actual number of SOC sight holders is currently unknown, although previously it has varied from approximately fifty to one hundred, but more recently cut this back.

The DTC controls the amount of diamond rough that is released and the type of diamond rough that is released in an attempt to maintain the stability of diamond prices.

Until very recently, diamonds recovered by artisans, small miners and junior companies were purchased more or less at the point of recovery by buyers. A practice carried on by all sizes of diamond dealers, from independent operators (largely originating from Israel, the Middle East and Antwerp) to De Beers. The dealers then took their stock to cutting centres and to the diamond exchanges for on-selling to be cut and polished. An obvious weakness for the producer is that diamond prices are not like gold or base metal — they are not transparent nor are they published in the general media.

This has led to the appearance of auction houses that mimic the De Beers 'sight' auctions except in so far as they are open to any registered buyer. The auction is like any ordinary auction and comprises an initial period (usually a week) in which producers bring their stones to be acid cleaned, graded and parcelled, followed by a similar period during which buyers view the parcels and lodge their bids. The whole process is electronic, gives the seller the best chance of achieving the highest price, and costs him a commission usually in the region of 1.5% of value of the parcel. For the buyer, it may mean higher prices but it also enables him to see more stones, more quickly, more safely than before.

In South Africa, the auction house initiative has been so successful that they are now conducted at a variety of on site and online auctions. De Beers is also selling a small volume through online auction.

#### **Downstream Integration**

Mining, selling rough, processing, marketing polished stones, manufacturing and selling jewellery have traditionally each been discrete operations. This pattern is now changing. De Beers is moving into retailing, with flagship stores in the major cities of the world and its partnership with top-shelf retailer LVMH. Still controlling over 60% of the world's rough output, it is in a position to counter the threats of synthetics, treatments, and conflict stones in one hit. Russia's Alrosa, with over 20% of rough output, is a possible challenger, but it has marketing arrangements in common with De Beers and seemingly lacks the high-end stones, although not the wealthy consumers, necessary to exploit premium branding.

Rio Tinto, through Argyle and Diavik, could come close — and led the way in developing market demand for 'champagne' diamonds where there was none before — but to date has shown no enthusiasm for downstream activities.

In our opinion, the creative input to the multitude of diamond jewellery designs will prevent downstream integration and associated price rises in all but the top end of the market. At that end, miners with retail placement have control of many of the larger stones, and can effectively funnel those stones to their own stores.

#### **Beneficiation at Source**

With most mineral commodities it has long been a historic characteristic that they have been processed to final form close to centres of consumption rather than production. Reasons have included costs, a lack of local skills and political risks. While it is of little concern to an individual company where its diamonds are cut and polished as long as it achieves the right result, it matters to governments. Increasing skill levels, higher employment and tax revenues inevitably flow.

So, the traditional cutting centres (India, Israel, Europe) and grading locations (London, Antwerp) are under threat. Pressure from Botswana, Namibia and Canada in particular has quickly led to De Beers and the Leviev Group acquiescing to demand for in-country facilities to add value to the raw product.

India will provide the real testing ground. The world's second most populous country employs over 750,000 people cutting over 75% of all diamonds with a combination of skills and low costs that will not be matched elsewhere bar (perhaps) China. It is perhaps inevitable that the trade will start to brand diamonds according to cutting source, as already practised with coloured stones.

#### Governance and Conflict Diamonds

With six countries producing over 90% of the world's diamonds, governance should not be an analytical poser. The table on the following page summarises the main characteristics of each of these six.

Seven years since inception, the Kimberley Process (detailed overleaf) has been partially successful. Companies take their responsibilities seriously, with a far greater awareness of what that responsibility entails and the impact that activist pressure can have on image and investment rating; even if the red tape is met with a degree of resigned acceptance.

In other areas, however, there is an apparent lack of cohesion and continuity of response. At the store counter level, where the impact should be greatest, there is an almost total lack of (or demand for) evidence of certification from seller and buyer alike. On this evidence it could be argued that the importance of the issue was blown out of proportion by media coverage that provoked short-term public debate.

Investment I	Profiles of Major Producing Countries
Botswana	An African success story, wedded to De Beers through Debswana and an increasing investment destination for mining.
Canada	A solid investment protocol, but plagued by vexatious import and export tax legislation. An insistence on upgrading product in the North West territories placing pressures on companies.
Russia	Still semi state-controlled through Alrosa and resisting inflows of capital. Further state involvement is being attempted.
DRC	The mining industry has already received significant foreign investment and more is expected – despite the high security risk and still questionable tenure. Mining licence review largely restricted to large base and precious metal operations.
Australia	Clean and clear investment guidelines but worrisome taxation issues.
South	The Black Economic Empowerment (BEE) policy may yet prove a deterrent to major new investment, although to date
Africa	this does not appear to be the case. BEE also encourages a proliferation of smaller BEE-empowered operators to re-treat
	tailings and re-open marginal mines.

Source: Ambrian

In the US meanwhile, a largely unrelated piece of legislation, the Patriot Act (enacted to prevent goods entering the US from which the proceeds of sale might flow-back to finance terrorist activities against it), has had the effect of promoting the importance of the certification scheme as a means of proving provenance and hence compliance.

Another emerging — if partial — solution gaining support in North America is for traders to offer only diamonds from Canada, the fastest growing producer in the world.

Independent of the Kimberley Process, but with a number of allied objectives, the UK-backed Extractive Industries Transparency Initiative has been embraced by some of the same countries (DRC, Sierra Leone and Liberia) in an effort to ensure earnings derived from the exploitation of a country's natural resources are properly deployed and accounted for.

#### **The Kimberley Process**

The term 'conflict diamonds' originated in 1998 from a report published by the UK-based non-government organisation Global Witness. It is used to describe rough diamonds originating from regions wracked by civil, military and political disturbances; they are used by rebel movements to finance these activities. The inference, almost certainly correct, is that revenue from illicit diamond trading promotes and sustains conflicts. The term is synonymous with Africa and with Angola, the Democratic Republic of Congo, Sierra Leone and Liberia in particular.

A separate but related issue is that of human rights abuses in both the mining and processing of diamonds, where practices in Brazil and India in particular do not stand up to close scrutiny.

In May 2000, Southern African diamond producing companies and states met in Kimberley, South Africa, to consider ways of stopping the trade in conflict diamonds. This was followed, in December 2000, by a United Nations General Assembly resolution supporting the creation of an international certification scheme for rough diamonds.

The Kimberley Process Certification Scheme (KPCS), ratified in November 2002, outlines the provisions for the trade in rough diamonds by way of a system of warranties. These warranties are designed to prevent the trade in conflict diamonds whilst protecting the legitimate trade in rough diamonds. Almost 70 countries are now participants in the scheme.

The KPCS imposes stringent requirements on all participants to guard against conflict diamonds entering the legitimate trade. Participants are required to implement internal controls, as outlined in the KPCS document, and all shipments of rough diamonds must be accompanied by a Kimberley Process certificate. In particular, participants can only trade with other participants who have met the minimum requirements of the certification scheme.

## Appendix 6 – Glossary

A\$ AIM	Australian Dollar Alternative Investment Market
Archaean	Rocks older than 2,500 million years old
CAR	Central African Republic
C\$	Canadian Dollar
cpht	carat per hundred tonnes
craton	Archaean crust that has been stable for a long time
ct	carat
cts/m <sup>3</sup>	carats per cubic metre
ctpa	carat per annum
cpht	carat per hundred tonnes
ct/bcm	carat per bench cubic metre
diamondiferous	containing diamonds
DRC	Democratic Republic of Congo
Fd	fully diluted
gm	gramme
g/t	gramme per tonne
grade	concentration of diamonds, typically measured in carats
	per cubic metre or per hundred tonnes
ha	hectare
JV	joint venture
km	kilometre
Mct	million carats
Mt	million tonnes
pa	per annum
potholes	Ancient depressions that now host high concentrations
	of diamond bearing gravels
runs	Buried stream beds that host high concentrations of
<u></u>	diamond bearing gravels
SG +	Specific Gravity, with weight in tonnes of 1M <sup>3</sup> of rock
t	tonne
tpm	tonnes per month
u/g US\$	under ground US Dollar
034	05 Dullai

## MBRIAN

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