

DIAMONDS

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2003 proved to be a disturbing and unusual year. The Iraq war and SARS increased unease around the world and curbed travel, but, in spite of this, the diamond industry witnessed a return of consumer confidence in the second part of the year and De Beers' Diamond Trading Co (DTC) reported a full year increase of 7% in rough diamond sales compared with 2002, up from US\$5.15 billion to US\$5.52 billion. Demand for rough is increasing and the long-term forecast to 2012 assumes an annual increase of at least 3%. A substantial supply shortfall is predicted, even if additional new mines come on stream.

The strong DTC sales raised De Beers' annual earnings by 17% and enabled the company to pay off its US\$3.5 billion worth of debt in two years instead of five, replacing it with a revolving credit facility of US\$2.7 billion. De Beers was also able to reduce its diamond stock pile to normal working levels.

DTC had an advertising and marketing budget of US\$180 million for 2003 and it is estimated that a further US\$272 million was spend by the trade in general.

In the US, Christmas 2003 sales of diamonds were 6% higher compared with Christmas 2002, and global sales for 2003 were up by 3% over the whole year. Diamond exploration worldwide picked up again during 2003 and in the second half it became easier to raise venture capital for new projects.

The most important events of the past year included:

- The European Commission gave its final approval to De Beers' new strategy of 'Supplier of Choice'. The DTC will be competing with other traders in a global market. 'Sights' will continue, although the selection of sight holders has been changed.
- The DTC increased the price of its rough diamonds three times during 2003, with the result that prices were 10% higher by the end of the year.
- The move by De Beers into the retail trade and the introduction of a brand name (the 'Forever' mark) in the Rapids World joint venture with the luxury goods chain Louis Vuitton Moët Hennessey (LVMH) has been implemented and the first diamond retail store of De Beers-LVMH was opened in Bond Street, London, on January 1, 2003. Three new stores also opened in Tokyo.

- The Kimberley Process, which involves certification for each parcel of diamonds to confirm the place of origin and the legitimacy of the miner, came into force on January 1, 2003.
- The new Minerals and Petroleum Development Act in South Africa is slowly being implemented in South Africa and was ratified by parliament on May 1, 2004. The act promotes Black Economic Empowerment (BEE) and includes regulations whereby South African-based companies controlled by black South Africans must have at least 15% equity within 5 years and 26% equity within 10 years in every South African *mining project* (not mining company). (Since the ratification of the Act, however, it appears that for diamond projects the percentage of BEE equity can be as high as 51% if mineral rights are held by the state.)
- The 'Money Bill' setting standards for royalty payments, including an 8% royalty on diamonds, is still being hotly debated.
- In Botswana, Debswana's Damtshaa mine produced 292,000 ct in its first full year of production. In Canada, the Diavik mine commenced production and produced 3.83 Mct during 2003.
- Canabrava Diamond Corp ceased to exist; its properties in Brazil were sold to Brazilian Diamonds (formerly Black Swan Resources) and in Canada its joint ventures were taken over by Superior Minerals.

Production

World natural diamond production in 2003 is estimated at 138 Mct, (worth US\$8.4 billion) a 14% increase over the 2002 total of 121 Mct. (The US Geological Survey estimates the 2002 total at 132 Mct, which presumably included sales from stockpiles). Canada's Ekati mine produced close to 4 Mct in 2003, similar to the 2002 figure, and the new Diavik mine produced 3.8 Mct, bringing the Canadian total close to almost 8 Mct, worth US\$880 million, which is 6% by weight and 11% by value of world production. South Africa, Botswana and Namibia increased their annual production by 11%, to 12.4 Mct, 30.4 Mct and 1.4 Mct respectively. Australian output decreased by 9% to 30.9 Mct.

Exploration

Diamond exploration is still continuing at a brisk pace, with Canada in the lead. Worldwide, close to 200 companies are involved, investigating 460 projects. Total expenditure increased by 3% over the previous year to an estimated US\$250 million, with Canada accounting for 50%, South Africa 10%, the rest of Africa 17%, South America 10% and Australia 13%. De Beers' global exploration budget rose by 11% to US\$76 million of which US\$24 million (32%) was spent in Canada.

Canada

By the end of 2003, the total number of kimberlites discovered in Canada was close to 600, most of them in the Archaean Slave Craton in parts of the Northwest Territory (NWT) and Nunavut. Of this total, more than 200 are

located within the Ekati and Diavik mine leases and reflects the intense exploration activity in the area which began after the first discovery of diamondiferous kimberlite there in November 1991. So far this exploration has generated the development of two mines – Ekati, which commenced production in October 1998, and Diavik, which commenced production in March 2003 – and four advanced projects – Snap Lake (production planned to commence in 2006), Jericho (production planned to commence in 2005), Gahcho Kué (feasibility study commenced) and Victor (mining to commence in 2007 if permitting is completed).

A shift in exploration activity from the Slave Province to other areas, in particular to the western and northwestern shores of Hudson Bay in Nunavut and to the Otish Mountains in northeastern Quebec, continued in 2003. Activity is about equal for NWT-Nunavut and Quebec, but much work is also going on in Alberta, Saskatchewan and Ontario. In 2003, De Beers Canada spend US\$24 million in 30 projects located in NWT-Nunavut, Saskatchewan, Ontario and Quebec, Ashton Mining Canada spend about US\$14 million in Alberta, Nunavut and northern Quebec, and Kennecott Canada Exploration about the same amount in Nunavut, Ontario and Quebec.

Nunavut: in 2001 exploration activity had moved from the southern and central portions of the Slave Craton to its northern portion in the Coronation Gulf district in Nunavut. This shift continued in 2002 but, although about 20 kimberlites were discovered, activity decreased in 2003 after results from mini bulk sampling of several kimberlites (Artemisia, Potentilla, Anuri) did not come up to expectations. The main explorers, Kennecott and Ashton, withdrew to focus their attention elsewhere (although Ashton recently announced that it will spend C\$1.5 million in this area in the 2004 summer season). Also, Stornoway Diamonds is active in the area in JVs with many juniors.

Kennecott also withdrew from the Jericho project, now 100%-owned by Tahera Corp, which is aiming to develop the first diamond mine in Nunavut. Planning and permitting stages are on track and, if all permits are granted in time, initial production will commence in the middle of 2004 and full production in the first quarter of 2005. Tahera has agreed to sell all Jericho's output to Lazare Kaplan International, with an option to reserve 25% for sale elsewhere. Tahera submitted its final Environmental Impact Statement (EIS) for Jericho in January 2003, and in March 2004 the Nunavut Impact Review Board (NIRB) hearings recommended that the application to develop a mine should be granted. The company plans to construct a mine at a cost of US\$50 million with a life of eight years commencing with an open pit for the first four years. Proven reserves are 2.6 Mt at a grade of 1.2 ct/t and an average value per carat of between US\$88 and US\$92. At a planned mining rate of 330,000 t/y for the open pit, this will yield approximately 400,000 ct/y. Several unresolved kimberlite indicator mineral trains within 10 km of Jericho were investigated and led to the discovery of a diamondiferous dyke near Bird Lake, 15 km south of Jericho.

After ironing out some problems, the De Beers Canada/Rhonda Mining JV is still in force and is continuing to evaluate the Knife kimberlite. In addition, Rhonda has formed a joint venture with Teck Cominco Ltd on the Inulik property which adjoins the Knife property.

Diamond prospecting is still continuing on Victoria Island north of Coronation Gulf. About 20 kimberlites have been discovered so far by several junior companies, the most active of which is Diamonds North. To date, despite much work, no economic discoveries have been announced. Further to the west of Coronation Gulf, Diamondex has prospected the Lena West property by aeromagnetic surveys and drainage sampling but no significant discoveries have yet been announced.

In the eastern part of Nunavut, along the north shore of Baffin Island at Jackson Inlet, Twin Mining continues to prospect its property around the Freightrain and Cargo kimberlites. Additional kimberlite bodies have been found in the area between these two kimberlites. Kennecott found three bodies in an adjacent area and has farmed in on the Twin Mining ground.

A large new area for diamond exploration has emerged along the western and northwestern shore of Hudson Bay, from Rankin Inlet to Melville Island and Boothia Peninsula. Some 260,000 km² of ground had been staked by the end of 2003. The largest landholders are De Beers, followed by BHP Billiton, Stornoway Diamond Corp, Diamonds North and Dunsmuir (in alliance with BHP Billiton). Many kimberlites have been found, but results from microdiamond recovery have been lacklustre, except on the north of Melville Island where a JV between Stornoway (70%), BHP Diamonds (20%) and Hunter Resources (10%) discovered two kimberlites on the large Aviat property. Aviat 1 kimberlite yielded 6.52 ct from 7.4 t, which gives a provisional grade of 0.88 ct/t, all diamonds were over 0.85 mm and the largest was 0.4 ct.

The largest kimberlite field is near Rankin Inlet, where a JV between Shear Minerals (51%), Northern Empire Minerals (replaced by Stornoway) (35%) and BHP Billiton (15%) on the Churchill property, has found up to 18 kimberlites up to end-2003, with ten proving to be weakly diamondiferous. Also Cumberland/Comaplex found ten kimberlites (including dykes) of which one was weakly diamondiferous.

Northwest Territories: in the central part of the Slave craton in NWT, the Ekati mine (BHP Billiton 80% and Fipke and Blusson, the original prospectors, each with 10%) is exploiting by open pit a tight cluster of four small pipes, Panda, Koala, Fox and Leslie, and the Misery pipe, 30 km to the south. Underground development commenced at Koala North during 2002 and at Panda in July 2003. Annual production amounted to roughly 3.5 Mct in 2002 and 3.98 Mct in 2003. In late 2002, BHP Billiton ended the agreement whereby De Beers purchased 35% of Ekati's output, and will now market all of Ekati's production. All mine production is sorted and valued at Yellowknife prior to shipment for sale. About 8% of the diamonds produced are cut and polished there under the brand name Aurias Diamonds.

The development of the Diavik mine (60% Rio Tinto and 40% Aber Diamond Corp) proceeded on schedule and within the budget of US\$ 850 million (C\$1.3 billion). The plan is to mine a tight cluster of four small pipes – A154S, A154N, A21 and A418 – which lie under the shallow waters of a bay at Lac de Gras. A water-retention dyke has been constructed to encircle the cluster and the water pumped out. Mining operations commenced in early 2003 from an open pit on the A154S kimberlite at a planned rate of 500,000 t/y. The mine was officially opened on July 19, 2003 and produced 3.8 Mct in 2003. It came as a surprise when the top layer which was believed to represent lake sediments turned out to be a layer of kimberlitic ash more than 10 m thick. This has added 200,000 ct to reserves at A154S, but at a lower grade so that the full production rate for 2004 has had to be scaled down from 8.2 Mct to the upper range of 7-8 Mct.

The Snap Lake project (100% owned by De Beers) is a shallow-dipping kimberlite dyke with a mineable reserve of 22.8 Mt. The final environmental permit was received in June this year, construction will begin next year and full production is scheduled for 2008, four years behind schedule. The project will cost C\$490 million and annual production from the underground operation will be 1.05 Mt/y yielding 1.53 Mct/y. The mine life of just over 20 years is based on a mineable resource of 22.8 Mct averaging 1.46 ct/t and a value of US\$76/ct. Operating costs are estimated at C\$103/t of ore.

It is interesting to note that a recent revised estimate by De Beers and others for the revenue per tonne (the product of grade and value per carat) for six projects is as follows: Diavik US\$378, Ekati US\$147, Snap Lake US\$182, Jericho US\$110, Gahcho Kué US\$100 and Victor US\$90. Taking also into account the defined reserves gives a total value as follows: Ekati US\$8.8 billion, Diavik US\$9.8 billion, Snap Lake US\$4 billion, Victor possible US\$2.7 billion, Gahcho Kué a possible US\$1.6 billion, and Jericho US\$0.3 billion.

The Gahcho Kué project (De Beers 64%, Mountain Province/Camphor Ventures 36% combined) has moved to a US\$17.5 million feasibility stage focusing on the Hearne, 5034 and Tuzo bodies. Thus far, eight small kimberlite pipes and several sills and dykes have been found, but the JV partners are encouraged by the recovery of large diamonds of up to nearly 10 ct weight.

The title over a property at Doyle Lake, which includes a diamondiferous sill and is located immediately south of Kennady Lake, has been awarded to GGL Diamond Corp after a long period of litigation. A joint venture with De Beers has now been finalised to investigate the potential of the sill.

Several junior companies are continuing diamond exploration in various parts of the Slave Craton in NWT. Recently New Shoshoni Ventures found a second diamondiferous kimberlite in the Drybones Bay area where it has signed joint ventures with Snowfields Development and Consolidated Gold Win Ventures.

Alberta: Ashton is continuing with its prospecting activities in the Buffalo Hills in joint ventures with Alberta Energy and Pure Gold. The total extent of their property now amounts to 1.4 Mha. To date, 38 kimberlites have been found of which the most promising is K252, which was found by an EM survey instead of an airborne magnetic survey. The interesting grade of 0.55 ct/t and the promising EM results have encouraged Ashton to persevere with its exploration in the Buffalo Hills area although most of the company's exploration efforts are now in northeastern Quebec.

Saskatchewan: the main operation continues to be the joint venture involving De Beers (42.25%), Kensington Resources (42.25%), Cameco (5.5%) and UEM (10% free carried). A 10.23 ct diamond was found in the top clay-rich layer of the 140/141 body. A US\$3.5 million drilling programme, which includes large diameter (up to 36 inch diameter) drilling to collect mini bulk samples from the 140/141, 148 and 150 bodies, was undertaken in 2003. Examination of the drill cores has not yet been completed but microdiamond counts of over 20 per 10 kg have been found so far. Additional kimberlites are still being discovered and, in July 2003, Forest Gate Resources found the Dizzy kimberlite to the northeast of the Fort à la Corne area.

Shore Gold continues to evaluate the Star kimberlite, which has a potential resource of 400 Mt, and is sinking a 4.5 m diameter shaft.

Manitoba: Dunsmuir Ventures formed a JV with BHP Billiton to apply the Falcon airborne gravity gradient survey over selected areas where BHP Billiton had previously found kimberlite indicator minerals. No significant discoveries have been announced to date. (Although kimberlite indicator minerals have been found in many places in northern Manitoba, the only discovery has been a kimberlite dyke at Wekusko Lake found in 1984.)

Ontario: diamond prospecting is focused in an area near Wawa and in the James Bay Lowlands around and to the south of the Attawapiskat cluster. In 1988, De Beers discovered 16 diamondiferous kimberlites in the region, a JV involving Canabrava and Navigator discovered one in 2002 and Spider Resources discovered two kimberlites in 1994 and two more this year.

De Beers is continuing its evaluation of the Victor pipe, a complex structure comprising two pipes coalescing at surface to cover an area of 15 ha. The two lobes of the pipe have pyroclastic and hypabyssal facies, with variable grades, making ore reserve calculations difficult. The overall grade is low but the quality of the diamonds is high (clear white with virtually no inclusions), the value per carat is allegedly over US\$200 and revenue per tonne could be some US\$66 (C\$94). De Beers submitted an EIS in early 2004 and if permitting is on track it hopes to develop a mine and commence production in 2007. The mine would have a life of 12 years producing 6 Mct. Neighbouring pipes Tango, Tango Extension, Delta and India are also being evaluated.

There has been considerable activity in claim blocks adjacent to Attawapiskat along the trend of the Temiskaming structure, and as many as four kimberlitic

bodies appear to have been found on the Metalex Ventures/Arctic Star property. However, the correct classification of the rocks intersected is difficult and has not yet been resolved. Further south along this trend in the New Liskeard-Cobalt area, Sudbury Contact Mines has continued to re-assess four kimberlites in Lundy township and originally discovered in 1994-95. A bulk sample was collected from the 5 ha 95-2 kimberlite.

Several juniors, including Tres-Or Resources, AntOro Resources, Big Red Resources, Coba Mining and JML Resources are continuing diamond exploration in the Lake Temiscaming area in Ontario as well as on the extension into Quebec.

In the Wawa area, several companies are continuing to prospect the enigmatic diamondiferous rocks north of Wawa, although interest has waned as no commercially viable deposits have been found. Although the JV between De Beers and Pele Mountain Resources on the Festival property is still in force, Kennecott has withdrawn from its JV with Band-Ore Resources on the GQ property and from its JV with Canabrava (now Superior Minerals) which explored a large area south of Wawa. Also, work on the Enigma property by the Oasis/Arctic Star/Iciena JV has been scaled down, although a few microdiamonds were found in cores drilled into the Dogma Pipe breccia.

Québec: in northern Quebec an area extending from the east side of James Bay to the Otish Mountains is being explored by many companies, some of whom hold land areas in excess of several hundred thousands of hectares. They include Majescor on its own account or in JVs with BHP Billiton, Superior Minerals and Ashton. However, the discovery rate of kimberlites to date has been very low, except for Ashton. On its Foxtrot property it has discovered ten kimberlites forming the Renard cluster and Lynx, a dyke at the head of one of several kimberlite indicator minerals trails. Mini bulk samples from the Renard pipes have yielded provisional grades of over 1.0 ct/t, and a 4 ct diamond was found in a drill core from Renard 65 in June 2003. A US\$12.5 million exploration budget has been approved for 2004 to evaluate the Renard cluster further.

Ashton's success has encouraged many other companies to take up ground in the general area, but so far no significant discoveries have been announced.

United States

Although alluvial diamonds have been found in the US since 1843, and the first diamondiferous kimberlites or related rocks were found in 1906, systematic exploration for diamonds has been lacklustre. Marum Resources has investigated the Lollipop ultrabasic structure in Kentucky without encouraging results, a Dunsmuir-Majescor JV is reported to be exploring in the Upper Peninsula of Michigan and Diadem Resources continues to evaluate its Leek Springs property in California.

Greenland

Several companies, including Cantec (formerly Dia Met), Citation and De Beers, continue diamond prospecting in Greenland, but no significant discoveries were announced in 2003.

Venezuela

Alluvial diamonds are mined by local workers, often in small syndicates. The main areas are Santa Elena in the southeasternmost part of the country on the border with Brazil, and the Guaniamo River area in western Venezuela where diamondiferous kimberlite sills were discovered in 1972. US and Canadian based-companies have been active in the area but some have been discouraged by difficulties in gaining title and social unrest. However, in May this year, TSX Venture Exchange-listed Kansai Mining Corp reported that a custom-built, bulk-sampling plant would be in operation soon at its Natal project. It will be used to treat 25,000-30,000 t of saprolite material from trenches across the Belmudez zone, believed to represent the weathered surface zone of ultrabasic and probably rotted kimberlitic schists.

Recently, De Beers announced that it has withdrawn from diamond exploration in Venezuela.

Brazil

Nearly every major river system in Brazil contains alluvial diamonds and many deposits are mined by garimpeiros, local workers, often grouped into small syndicates or backed by Brazilian companies. Expatriate companies have been prospecting since 1975 and have found hundreds of kimberlites in many areas, but so far none has proved to be the source of sufficient diamonds to justify a mine.

De Beers withdrew from diamond exploration in Brazil at the end of 2003. Rio Tinto and BHP Billiton also appear to have terminated exploration for diamonds, but continue with base metals exploration. The re-evaluation of alluvial and primary host rock projects, previously found by these big companies, and by several smaller Canadian and Australian companies continues, but so far no profitable mine has been established. The latest advanced projects include:

- the Juina JV in Mato Grosso between Juina Mining (49%) and Diagem (51%) which is investigating kimberlite pipes and alluvial diamonds;
- Chapada Diamonds' alluvial project in Mato Grosso (sold to Australian junior Elkedra in April 2004);
- the bulk sampling alluvial project on the Abeate River, a JV between Brazilian Diamonds (formerly Black Swan Resources) and Australian junior AKD which is showing promising results and which is earning AKD a 50% equity interest;
- Brazilian Diamond's exploration of properties formerly owned by Canabrava (now defunct) located further upstream in the Abeate River. Brazilian Diamonds now controls a large tract of this river;

- the Canastra kimberlite project in southern Minas Gerais, purchased from De Beers by Brazilian Diamonds, which is confident that it can develop a mine;
- and Brazilian Diamonds' work on properties purchased from Canabrava in the area of Patos de Minas in Minas Gerais, where many kimberlites and lamproites have been found in the past ten years.

Australia

Because of improved recovery processes, the Argyle diamond mine in Western Australia increased production from 26.1 Mct in 2001 to 33.6 Mct in 2002, but bad weather and the termination of alluvial mining at the end of 2002 brought production in 2003 down to 30.9 Mct. The life of the open pit runs to 2007. In February 2003, a two-year US\$45 million feasibility study commenced with the construction of a 2 km long decline to evaluate an underground mine that would extend mine life to 2018.

Merlin, Australia's second mine, closed in mid 2003, after a four-year life in which it produced approximately 500,000 ct of high-quality diamonds. The largest diamond found weighed 104.73 ct and was recovered in March 2003. The mine and surrounding area have been sold to Striker Resources.

Ellendale in WA, Australia's third hard-rock mine, was developed by Kimberley Diamond Co (KDC) on parts of two lamproite pipes, Ellendale 4 and 9. It commenced production in July 2002 on the western part of Ellendale 9, and by July 2003 had produced roughly 50,000 ct. Output is characterised by good-quality yellow diamonds. According to David Lapa of Overseas Diamonds in Antwerp, the average value per carat was US\$150. Production during the second half of 2003 was 28,650 ct for an average value US\$200/ct. A new 2.2 Mt/y plant was commissioned in November. Recent investigations by the large-diameter Bauer drill indicated economic resources in the central and eastern parts of Ellendale 9 which yielded diamonds with a value of more than US\$300/ct. The Bauer drill has been very successful in finding economic resources where previous small-diameter drilling did not show significant results. Combined with a recent Falcon survey over an area to the north of Ellendale, which found additional lamproite bodies, the drilling will enable KDC to raise US\$18 million for further development and exploration.

Striker Resources, which has been working hard to establish a mine in the Seppelt area in the northern part of the Kimberley region of Western Australia, continues to obtain encouraging results in its evaluation of the Seppelt 1, 2 and 5 kimberlites.

Thundelarra Exploration has put its Philips Range project (where a Falcon survey found additional small kimberlites in 2002-03), on the back burner and is focusing its efforts on platinum prospects in the East Kimberley region.

In South Australia, Tawara Resources failed to intersect kimberlite when drilling at its Flinders Island project, where highly promising kimberlite indicator minerals were recovered. It has not given up on this project although De Beers has withdrawn from the JV. Tawara is continuing to investigate the

Timber Creek kimberlites in the Northern Territory but it is focusing most attention on its exploration of the Daniel channel in South Africa.

Flinders Diamonds, which floated successfully in early 2002, announced the discovery of two kimberlites in the Barossa Range east of Adelaide in South Australia, and continues prospecting on JV properties in the Pilbara and Kimberley regions of Western Australia.

Gravity Capital, which has a licence from BHP Billiton to use the Falcon method, has split off its diamond interests in a new company called Diamond Mines Australia Ltd. Two junior diamond explorers, Paramount Mining Corp (managed by Maureen Muggeridge) and DiamonEx floated successfully in early 2004.

South Africa

De Beers continues to operate the three mines in Kimberley, Dutoitspan, Bultfontein and Wesselton, and the Finsch, Koffiefontein, Premier, Venetia and The Oaks kimberlite mines, plus three alluvial mines. The three old Kimberley mines are underground mines operating at depths of 700 to 800 m, and are plagued by clay-rich mud rushes. The new Central Treatment Plant at Kimberley, which commenced operations in September 2002, has come on stream after overcoming start-up problems. The plant was specifically constructed to process clay-rich ore and old mine tailings, and would assure continued operations of the Kimberley mines to 2018. However, the strengthening rand has put pressure on the profitability of these old mines and also on the Koffiefontein mine. It has also delayed the decision to implement the C-cut in the Premier mine, which would have extended its life by 20 years. At its centennial celebration, Premier has been renamed the Cullinan mine.

The eight mines, together, produced 9.5 Mct in 2002 and 11.1 Mct in 2003. De Beers also has a 50% equity interest in SouthernEra's Klipspringer mine, which produced approximately 180,000 ct in 2003. Because of the strong rand, operations were suspended at the end of the year.

De Beers' the three alluvial mines are located in Namaqualand at Langhoogte on the Buffels River and at Kleinzee and Koiingnaas-Hondeklip along the coast. Together, they produced about 800,000 ct in 2003. Other alluvial operators in Namaqualand include Transhex and Firestone Diamonds, both with mines at Hondeklip and along the Orange River.

Despite protracted negotiations, the South African Government has not yet made a decision to privatise 51% of its Alexkor alluvial mine located along the coast south of the mouth of the Orange River. Alexkor produced 80,000 ct in 2003, including two stones weighing 111 ct and 60 ct, found by contractors working in the tidal zone in January and December respectively.

Australian-based Namakwa Diamonds has outlined promising deposits onshore along the coast of Namaqualand in raised beaches about 38 m above sea level, located between 12 km and 47 km north of the mouth of the

Olifants River. A mining permit has been applied for but approval has been delayed pending promulgation and interpretation of the new Mining Act.

Australian and Canadian junior companies continue to mine small alluvial deposits along the Vaal and Orange Rivers with varying degrees of success. Dwyka Diamonds suspended operations in the latter part of 2003 in order to upgrade its recovery plant, and Majestic Resources sold its Riet River alluvial deposit and merged into newly-formed Crown Diamonds. The latter is upgrading the Star fissure mine (located in the Theunissen district of the Orange Free State) and the Messina fissure mine (located in the Bellsbank area), and is hoping to add the Helam fissure mine (located in the western Transvaal) to its mining operations. Crown produced 31,700 ct in 2003, including a 51 ct diamond. From 2006, it hopes to produce well over 100,000 ct/y from its three fissure mines.

Fissure mines exploit dyke material as opposed to pipes and appear to be in fashion in South Africa. Dwyka Diamonds, with local black economic empowerment (BEE) group Kolong Investments is investigating the Bosele fissure, which lies in the southward extension of the Bobbejaan fissure containing Crown diamonds Messina mine and De Beers' Dancarl mine (now closed) in the Bellsbank area.

Although Tawara Resources is evaluating kimberlite pipes at Perdevlei and Kareevlei West, east of Finsch, most of its effort is being directed to the Daniel Channel, a buried alluvial channel immediately south of the Finsch mine and found in joint venture with BHP Billiton as a result of a Falcon survey. Tawara can earn a 30% equity interest by outlining a viable alluvial deposit. It has completed an agreement with BEE group Seven Falls Trading Ltd.

Namibia

Namdeb, a 50:50 joint venture between De Beers and the Namibian Government, operates the onshore diamond-mining operations, and De Beers Marine Namibia, a JV between Namdeb (30%) and De Beers (70%) manages the major part of the offshore operations at about 110 m depth along the Namibian coast. The JV operates five drill ships and one crawler ship, the Ya Toivo, purchased from defunct Namco for US\$20 million and converted from drill to crawler ship. Onshore operations account for about 55% of production and offshore operations for 45%. Other previous and current offshore operators include the Trans Hex Marine/ Diamond Fields International JV (which recently became unstuck), Namco (which went bankrupt) and Afri-Can Marine Diamonds, which is attempting to evaluate and mine submarine river channels near Lüderitz, although operations have been hampered by difficult technology and profitable operations have yet to be established.

Namdeb's operations along the north bank of the Orange River are continuing and in May the new Daberas mine commenced production at a planned rate

of 100,000 ct/y. The Elizabeth Bay mine, south of Luderitz, has been upgraded and its life extended to 2013.

Australian junior, Mt Burgess Mining, continues to evaluate its Tsumkwe prospect in northern Namibia on the Botswana border, where it has found two kimberlites to date. Reefton Mining, another Australian junior, found good grades and good diamonds in exploration trenches along the Skeleton coast, north of Swakopmund.

Botswana

Debswana, a 50:50 joint venture between De Beers and the Botswana Government, is Botswana's sole diamond producer and operates the Orapa, Letlhakane and Jwaneng mines. In 2000, these operations produced about 22% by weight and 27% by value of world diamond production. Recent improvements in treatment and recovery have greatly increased the production capacity at Orapa and Jwaneng and thus figures for 2002 and 2003 are 28.4 Mct and 30.4 Mct respectively, the latter equivalent to 25% by weight and 30% by value of global diamond output and ranking Botswana as the world's number one producer. The US\$40 million Damtshaa mine, a complex of four small pipes of the BK cluster, located 20 km east of Orapa, commenced production in October 2002 and in 2003 produced 292,000 ct at a grade of 0.24 ct/t, which was better than expected.

Several Australian, UK, Canadian and South African junior companies, including Botswana Diamond Fields, Cantex, Firestone Diamonds, Kalahari Diamonds, Rio Tinto, SouthernEra, Trivalence and Tsodilo Resources continue their prospecting efforts in various parts of Botswana, but no economic prospects have been identified so far.

Lesotho

European Diamonds has acquired the Lihobong satellite pipe and will commence mine development soon. A company linked to Alan Bond is trying to interest investors in developing the Kao pipe.

Angola

Ascorp, the Angolan government agency, to which all legal alluvial miners must sell their diamonds and which is the country's sole legal exporter, has tightened its control. However, many Angolan diamonds are still sold in the Democratic Republic of Congo (DRC) where miners obtain higher prices, although the Kimberley certification process appears to be curbing this trade. By special arrangement with Ascorp, the production from Angola's major producer, Catoca, goes straight to Israeli buyers. The Catoca kimberlite mine, located in Angola's northeastern province of Lunda Norte, is managed by Sociedade Mineira de Catoca (SMC), a JV between Angola's Endiama (32.8%), Russia's Alrosa (32.8%), Brazil's Odebrecht (16.4%) and Diamond Finance Co (18%). Production in 2000 was 1.96 Mct, valued at US\$143 million; in 2001 it was 2.7 Mct, valued at US\$175 million and has probably increased in 2002 and 2003 to more than 3 Mct.

Government approval for opening Angola's second kimberlite mine, Camafuca, was granted to SouthernEra in 2002, but no news has been forthcoming. Development of Angola's third kimberlite Camatchia-Camagio was granted to a JV with similar equities as SMC, except that 18% of the equity is now held by Lev Leviev's Daumonty. DiamondWorks claims to have previous rights over this kimberlite.

Petra Diamonds, in joint venture with BHP Billiton, is exploring the Alto Cuilo kimberlites in the northwest of the country. Many individual diggers and small syndicates are working the alluvial deposits and several expatriate companies are returning to take part in these operations. De Beers has still not returned to Angola.

Mauritania

News of diamond exploration activities has been limited. Rio Tinto, De Beers and Rex Corp continue to explore and Rio Tinto collected a 25 t sample from one kimberlite.

Sierra Leone

Rebellion and civil war appear to have quietened down. In Kono District, Toronto-listed DiamondWorks Ltd, through its subsidiary Magma Diamond Resources (formerly Branch Energy Ltd), is restoring the plant in the Koidu kimberlite complex, and Mano River Resources Inc, working through a subsidiary, Golden Leo Resources, announced the discovery of eight new kimberlites containing macrodiamonds in the Kono area.

Guinea

Trivalence continues to produce good quality alluvial diamonds from its lease in southeastern Guinea, but Rio Tinto has withdrawn from the venture to search for kimberlite targets.

Ivory Coast

African Mining and Petroleum Resources plc (AMPR) (quoted on London's Ofex) entered into a JV with De Beers but recent insurrection has hampered further development of their Bobi concession where operations are put on hold. In the meantime, AMPR is concentrating on oil exploration.

Other Africa

Although conditions in **Zimbabwe** remain unsettled, Rio Tinto is reported to have decided to commence development of the US\$13.5 million Murowa project. Ore will be drawn from three small pipes with reserves of 16.5 Mt averaging 0.9 ct/t. Production will start in the second part of 2004.

Diamond production by artisanal and government agency operations and the private sector still continues in the **DRC, Central African Republic** and **Zambia**, but production and export data are unreliable as many diamonds move across national borders. According to Antwerp import statistics, several other African countries export substantial amounts of diamonds but most of these countries have no known diamond mining operations. Diamond

exploration is reported to continue in **Gabon** where De Beers, SouthernEra and Cantex are active, and Diamond Fields International is reported to have started diamond prospecting in **Madagascar**.

In western **Tanzania**, the reconditioned Mwadui mine (De Beers 75%, Tanzanian Government 25%) commenced production in 1997. Production in 2003 was 166,000 ct, a slight increase over the preceding year, but still a long way from a peak of 320,000 ct in 2000.

Russia

The major Russian producers operate large open-pit mines on the Udachnaya and Jubilee kimberlite pipes in the Sakha Republic (formerly Yakutia). A 301 ct diamond was recovered from Udachnaya in August 2003. All other open-pit mines are closed, but underground mining has started at International, Aikhal and Zarnitsa. The new Nakyn field of two major kimberlite pipes is also being developed for open-pit mining. In western Russia, the legal battle by Denver-based Archangel Diamond Corp (ADC) to have the title over the Verkhovina licence (which includes the economic Grib pipe) transferred to Almazny Bereg, a Russian company in which ADC holds 40% equity, is still unresolved. The Verkhovina area is located in northwestern Russia, 150 km north of Archangel. The area contains numerous diamondiferous kimberlites, including the Lomonosov group, where open-pit mining is reported to have commenced by Severalmaz, a company controlled by Alrosa. De Beers is reported to have commenced investigations at its Lushkaya project, located in the area between St Petersburg and the Estonian border. North Star Diamonds is exploring in western Ukraine.

Finland

European Diamonds and several other diamond explorers are continuing their activities in northern Finland, but lack of significant results from surface sampling and airborne magnetics has made it difficult to raise more venture capital. Conroy Diamonds and Gold plc has announced plans to demerge its Finnish diamond interests. The new company, to be named Karelian Diamond Resources plc, is expected to be listed on London's Alternative Investment Market. The portfolio includes 25 diamond claims and 26 claim reservations on the Karelian and Kola cratons in eastern Finland, and previous sampling has of glacial till has recovered kimberlitic indicator minerals.

China

No significant diamond exploration news has come out of China since Astro Mining withdrew early in 2000. However, former Astro Mining chief geologist Stephan Meyer has formed Redox Diamonds to explore in the provinces of Shandong, Anhui, Jiangsu and Inner Mongolia. The known Changma and Linyi deposits in Shandong are being re-investigated by China Diamond Corp (formerly Pan Asia Mining).

Indonesia

BM Diamond Corp raised £1.75 million through Ocean Resource Capital to commence operations at Cempaka in southeastern Kalimantan (the previous Ashton operation). Instead of using the large dredge, it is intended to make

river diversions and mine from dry open pits. A production of 47,000 ct/y is anticipated over a life of 18 years, with by-product credits from gold and platinum.

India

De Beers, Rio Tinto, BHP Billiton (the latter in joint venture with junior explorer Dwyka Diamonds), and other juniors, including Oropa and Australian Indian Resources, are exploring for diamonds in several states, including Karnataka, Maharashtra, Madhya Pradesh, Andra Pradesh and Chhattisgarh. Oropa's evaluation of the Mainpur diamond field, located 150 km south of Raipur, capital of the new state of Chhattisgarh, is still on hold because of legal complications. India's sole diamond producer is the Mahjawan open-pit mine, located 20 km west of Panna in Madhya Pradesh. It is operated by a government agency and has a modest annual production of 25,000 ct of good-quality diamonds.