

NAMIBIA

By Roger Murray

Production of most minerals mined in Namibia recorded an increase in 2002, and internal profitability generally improved due to the depreciated average annual foreign exchange value of the South African rand, to which the Namibia dollar is linked at par. The mining sector continued to contribute the major share of Namibia's foreign exchange earnings and its contribution to GDP and government revenues rose appreciably. Real GDP growth was an estimated 2.3% in 2002, up from 1.9% in the preceding year, and Bank of Namibia (central bank) preliminary figures showed the mining sector recorded strong growth. Real mining value-added rose by 4% in 2002 compared with a 6% decline in the preceding year, and is projected to show strong growth over the subsequent three years, mainly because of production from the new Skorpion mine and refinery, along with further expansion in offshore diamond recoveries and increased copper output.

Skorpion was commissioned in May 2003 and is expected to boost real GDP growth by some 4% in its first year of full capacity operation. The government's current medium-term economic framework (MTEF) covering 2003-05, projects annual average real GDP growth of 4.4% during the period. Skorpion's impact was initially expected to be strongest in 2003, when real output growth in the primary sector of the economy was a projected 9%; however, it is not scheduled to reach full capacity until the second half of 2004.

In local currency terms, mineral export earnings totalled a record N\$7.7 billion in 2002, up by 24% over the previous year, and equivalent to 69% of Namibia's total exports by value. However, due to the weaker South African rand/Namibia dollar, the increase in US dollar terms was only 2% to US\$731 million. Diamond exports of predominantly high-quality gemstones also rose, by just under a quarter in local currency terms to N\$5.6 billion, although for the same reason in US dollar terms the increase was also 2%, to US\$532 million. Other mineral exports were worth N\$2.1 billion in 2002, up 26% over the preceding year, translating into a US dollar-denominated increase of 3%, to US\$200 million.

The substantial appreciation of the foreign exchange rate since the end of 2002 would result in reduction in local currency-denominated export growth in 2003, although this would be largely offset by the additional earnings generated by zinc metal exports from Skorpion. However, as with the major South African gold producers, a sustained appreciation in the foreign exchange rate was likely to cause difficulties for some mining firms, and in early 2003 Rossing Uranium Ltd warned that it might proceed with closure of the mine by 2010 rather than investing in a planned extension of the mine life into the following decade.

The mining industry has also continued to be the largest source of corporate tax revenue to the government, including direct income tax, royalty and dividend payments, along with a substantial proportion of value-added tax (VAT) receipts. With the exception of the diamond sector, growth in tax receipts from the mining industry is likely to slow as new developments involving significant value-adding, qualify for export processing zone (EPZ) status, under which liability to income tax (but not royalties) is waived for the life of the project. In consequence, most revenue generated by Skorpion will not be subject to income tax, as the refinery, where the major proportion of profits will be earned, has EPZ status. Diamonds contribute the bulk of government tax and royalty receipts and in the 2002/03 fiscal year (March 31-April 1), total payments were N\$1.45 billion, of which N\$1.0 billion comprised diamond income tax and N\$450 million diamond royalties, up by 38% on the preceding year. For 2003-04, payments were estimated to rise further to a new record total of N\$1.6 billion. The higher-than-anticipated revenues mainly reflected the impact of foreign exchange depreciation against the US dollar, which boosted local currency earnings and profitability of diamond-mining firms.

The increased diamond receipts for 2002-03, which came in well above the original revenue estimate, were revealed in the additional budget estimates for that fiscal year tabled in October 2002 and resulted in the government deciding not to take up an offer by the US diamond trader and De Beers sight holder, Maurice Tempelsman, to pre-purchase part of the output of Namdeb Diamond Corp. (Namdeb), the biggest Namibian diamond producer owned by De Beers and the government on a 50:50 basis. Mr Tempelsman had proposed in a confidential May 2002 letter to Namibia's President Sam Nujoma, subsequently leaked to the local press, to provide a US\$80 million offshore financing facility, of which US\$50 million could be used to help offset Namibia's budget deficit. It was reported that Mr Tempelsman had made his offer following a Cabinet decision in early 2002 to invoke Section 59 of the Diamond Act, 1999 (which provides the government with powers to market up to 10% of the net proceeds of rough diamond exports by Namdeb or any other producer independently on the open market), due to unhappiness at the decision by De Beers' Diamond Trading Co. (DTC) to defer purchases of a portion of production by its contracted producers, including Namdeb, because of the downturn in the global diamond market.

Mr Tempelsman's offer was stated to be conditional on Namdeb's current five-year exclusive marketing contract with the DTC being extended "through 2008", three years beyond the present expiry date. Namibia's then Mining and Energy Minister, Jesaya Nyamu, confirmed that the government would ideally like to market a proportion of the country's diamonds independently, seen as a reference to Namdeb's marketing arrangements, as other producers already sold their output outside the DTC. Although Mr Nyamu was replaced in an August 2002 cabinet reshuffle by Nickey Iyambo, as the former was moved to the trade and industry portfolio, the move was not viewed as a demotion by President Nujoma. Shortly after the additional budget was tabled, providing for a reduced budget deficit for 2002-03, the Finance Minister, Nangolo Mbumba,

declared that Mr Tempelsman's offer was now "off the table", while Mr Iyambo subsequently confirmed that taking into account what Namibia was now receiving for its diamonds "there is no need to invoke Section 59 as of now". Local diamond experts have speculated that invoking Section 59 at some point in the future, which Mr Iyambo did not preclude, might be used by the government as a bargaining counter in future negotiations with De Beers on the renewal of the exclusive marketing arrangement between Namdeb and the DTC.

A comprehensive minerals policy drafted by the Ministry of Mines and Energy (MME) in consultation with the local mining industry and other stakeholders over the past two years was completed at the end of 2002 and was due to come into effect during 2003. The policy provides the parameters for future development of the minerals industry in line with Namibia's medium-term development goals as set out in the second five-year National Development Plan (NDP2) covering the fiscal years 2000-01 to 2005-06, in terms of which sustained growth of the mining sector is a key component. The policy also covers areas not included in existing legislation, such as the Minerals (Prospecting and Mining) Act of 1992, which mainly deals with the mineral licensing regime.

The policy commits the government to maintaining a conducive and enabling legislative and fiscal environment to attract private-sector investment in mining and exploration. It also provides guidelines for matters such as: local empowerment initiatives; tighter environmental controls and an integrated land-use strategy for when mining closures take place; encouragement of more intensive exploration and local value-adding of minerals mined; and clearer and more transparent guidelines for settling land-access disputes involving mineral licensees. The main policy goals are expected to be incorporated into the revised Minerals Act, for which final drafting was due to take place in 2003. It was expected that the revised act, along with the much-delayed compilation of regulations relating to mineral licences, would be completed by mid-2003 so that a minerals legislation package could be submitted to parliament for enactment by the year-end.

The existing tax regime for the mining sector is also expected to be revised under a general review of corporate taxation by the government, the results of which were due to be announced during the 2003-04 fiscal year. In order to ensure Namibia's tax regime remains globally competitive, the new fiscal framework would take into account the different phases in the life cycle of a mining project, with potentially lower tax charges in the initial phases of a new development. Most of the minerals policy goals are likely to prove acceptable to the local industry and foreign investors, although the latter will be required to make more specific commitments in the fields of mine rehabilitation, environmental protection, local empowerment initiatives and training.

However, in contrast to the new South African mining legislation, no specific empowerment targets were set out in the minerals policy, for example, no timetable for progressive localisation of ownership or minimum equity requirements for empowerment groups. In fact, the government has become

concerned that some empowerment groups given preference in the allocation of new mineral licences, especially those forming joint ventures with foreign partners for diamond prospecting, have not adhered to the stated procedures. At the end of 2002, Mr Iyambo stated that many were simply selling on their rights without prior consent to larger investors, and that he would advise the Cabinet to approve a moratorium on the award of exclusive prospecting licences (EPLs) to “previously disadvantaged Namibians” in such circumstances.

The Chamber of Mines of Namibia (CMN) had 59 members as of 2002, consisting of 29 full members engaged in mineral production or long-term exploration activities, and 30 associate members, mainly suppliers of services to the mining industry and consultants. Full time employment by the mining industry increased slightly in 2002 to 6,099, up from 6,026 in the preceding year, with total remuneration of N\$615 million (US\$58 million), compared with N\$566 million in 2001, equivalent to an average N\$101,000 (US\$9,600) per employee.

The promulgation of new mine health and safety regulations continued to be delayed pending completion of the process of revising the Minerals Act, but it was hoped that a comprehensive legislative package would be ready by mid-2003. As a result of harmonisation procedures for Southern African Development Community (SADC) mining industries, allied to international safety reporting procedures, accident statistics have been adjusted to a new baseline factor of 1 million employee hours compared with the previous 200,000. In general, the Namibian mining industry maintained its previously high levels of safety although five fatalities occurred during 2002, the highest figure since 1995. The number of reportable injuries was 27, almost double that of the preceding year, resulting in the highest accident rates per 1,000 employees for over 20 years, at 0.82 (fatalities) and 7.8 (injuries). This was despite regular workplace inspections by safety officials, intensive awareness campaigns and extended safety training by the major mining firms.

The HIV/AIDS pandemic showed no signs of diminishing during 2002, with a significant proportion of the mining industry’s workforce HIV positive according to available data. The larger mining firms, Namdeb and Rossing Uranium, have directly invested in anti-HIV/AIDS measures, while the CMN’s occupational health education and awareness programme expanded its activities. The programme is sponsored by Okorusu Fluorspar, augmented by funding from Family Health International and contributions by participating firms.

In August 2002, Namdeb became Namibia’s first major private-sector company to announce the provision of anti-retroviral drug therapy (ART), to be made available to all HIV-positive employees under a two-year pilot programme due to have commenced in January 2003. The programme has a N\$46 million budget, sufficient for five years based on the prevailing HIV/AIDS infection rate and assuming all infected employees would want treatment. In a voluntary saliva test taken by just over half Namdeb’s 2,900 employees in 2001, some 7% were found to be HIV-positive. Namdeb stated that a small

proportion of the drug cost would be funded by employees; the De Beers group had previously announced it would pay for 90% of the cost of ART provision to all its employees. During 2002, Rossing launched an HIV/AIDS impact study covering the possible provision of ART to its employees; the company already conducts an AIDS awareness and voluntary testing programme, with just under 4% of its 800 employees estimated to be HIV positive.

Diamonds

Diamond production rose by just under 4% to 1.55 Mct in 2002 despite reduced onshore and offshore recoveries by the main producer Namdeb Diamond Corp. (Namdeb), mainly due to substantially higher marine recoveries by Namibian Minerals Corp. (Namco). Offshore recoveries by all producers increased to a record 852,685 ct, or 55% of total diamond output in 2002. Namibia's overall production in 2003 is expected to be lower, mainly because of the suspension of mining by Namco at the end of 2002 due to financial insolvency, and the subsequent placing of its operational subsidiaries into provisional liquidation. However, overall recoveries are projected to rise subsequently as Namdeb, the 50:50 joint venture between the government and De Beers SA, is investing substantial amounts in a capacity expansion programme with a target of producing 1.5 Mct/y onshore and offshore by 2005, with new and/or expanded production by other operators also expected. During 2002, capital expenditure by Namdeb was N\$286 million (US\$27 million), the largest of any Namibian mining company, inclusive of N\$31 million spent on sampling and prospecting on land and offshore.

Diamond production (Table 1)

Namdeb's overall production declined by almost 8% in 2002 to 1,275,899 ct (1,384,704 ct in 2001) due to a reduction in the average grade mined on shore and mining difficulties offshore. Onshore operations in Diamond Area No. 1, the *Sperrgebiet* (prohibited area), recovered 696,914 ct (742,732 ct in 2001), of which the bulk came from Mining Area No.1, the 100 km coastal strip north of Oranjemund, 58,548 ct from mining areas inland along the Orange River north bank, and a somewhat larger but undisclosed amount from the Elizabeth Bay mine just south of Luderitz. The average stone size mined was 0.58 ct, with a large yellow octahedron diamond weighing 152.1 ct recovered in December 2002. Although total ore tonnage treated in Diamond Area No.1 increased by 28% to 28.1 Mt, up from 21.9 Mt in 2001, the average recovery grade fell to 2.5 ct/t in 2002, compared with 3.4 ct/t in the previous year.

Tonnage treatment in Mining Area No.1 just missed the target (by under 1%) due to a postponement in establishing continuous operations at No.2 plant, used for tailings treatment, where the amount of fine material exceeded estimates. Alterations are being made but further modifications may be required depending on the results of testwork. Initial problems with ore feed arrangements at new wet in-field screening facilities at No.3 plant were resolved by the end of 2002 when targets were reported as being achieved. At No.4 plant, similar technical problems were also successfully resolved, and the plant is expected to remain a major source of high quality gems until at

least 2006. The dredge unit operating in waterlogged parts to the south of Mining Area No.1 was reported to have performed well in 2002 although further modifications were made and a capital investment project to improve throughput and the quality of concentrates produced was due to be implemented in mid-2003; the viability of installing a second dredge unit remains under consideration.

Along the Orange River, the Daberas mine, 65 km northeast of Oranjemund, was officially opened by President Nujoma on May 30, 2002. Limited processing of alluvial gravel terraces had been underway since September 2000 using a 100 t/h mobile treatment plant, and a new in-situ treatment plant with a throughput capacity of 600 t/h was commissioned during 2001. This required modifications, involving the introduction of a high-rate thickener into the plant circuit to remove fine particles from the process water. In 2002, tonnage treated by the treatment plant, along with the mobile plant and in-field screening plant, amounted to 4.4 Mt; additional modifications have been carried out on all these facilities with the aim of reaching full capacity by mid-2003. Daberas, with 300 employees, has replaced the similar Auchas mine which ceased operating at the end of 2000, and the current mining plan is for a further nine years' production.

Offshore recoveries proved disappointing in 2002, with output falling for the second successive year. De Beers Marine Namibia (DBMN), Namdeb's exclusive contractor in the Atlantic 1 deepwater concession, recovered 513,053 ct and mined some 2.5 km², down from 542,915 ct in the previous year and 3% below budget. The reduced output was mainly due to operational problems with the newest mining vessel in the four-strong DBMN fleet, the *!Gariiep* (Orange), which was laid up in 2001. The *!Gariiep* was the only DBMN vessel to have been equipped with a seabed crawler mining system and in its 2002 annual review De Beers stated that the use of crawler technology was being reviewed to cope with "the difficult offshore mining environment", whereas drill-mining technology was described as "a proven mining system".

To this end, a US\$27 million project to convert the *!Gariiep* to a drill-mining vessel at a UK shipyard on Tyneside was approved in August 2002; it will provide a 3 Mct production capacity during the vessel's estimated 20-year operational life. Conversion was on schedule for completion by end-June 2003, some five months ahead of schedule and within budget, with the official handover to Namdeb due at the start of November 2003. Despite De Beers' expressed reservations about using a seabed-crawler mining system (as some parts of the Atlantic 1 concession are deemed appropriate for mining with this type of technology), in April 2003, DBMN paid US\$20 million for the Nam2 crawler, the newest and more efficient of the two mining systems previously owned by Namco (see below).

Inshore mining of beach and shallow waters by Namdeb contractors produced 65,932 ct in 2002 (99,057 ct in the previous year) and empowerment efforts were continued with the consolidation of relations with previously-disadvantaged small contractor groups. Although the average grade mined offshore is not disclosed, Namdeb's overall recovery grade (including

offshore) was stated to be 4.5 ct/100 t in 2002, down from 6.3 ct/100 t in the previous year. This indicated there had been some reduction in offshore grade compared with 2001 but also that the recovery grade is substantially higher than onshore, although average stone size is smaller.

Namdeb is implementing several major projects to raise production capacity over the next two years, of which the main component will be an expansion in offshore recoveries by DBMN to around 700-800,000 ct/y, to offset the depletion of land-based reserves. The conversion of the *!Gariap* to a mining vessel equipped with drill-ship technology is expected to make the main contribution to expanded output. However, Namdeb is also investing in onshore mining capacity, including the installation of new technology at the Elizabeth Bay mine to extend its life by at least ten years, maintaining employment for the existing 170 staff and providing an additional 40 permanent jobs. Production for the life of the project is stated to be 2.0 Mct, indicating average annual recoveries of 200,000 ct, about double the mine's existing capacity.

The N\$400 million (US\$52 million) project, approved in April 2003, is being carried out by Bateman Projects Namibia, a subsidiary of South Africa's Bateman Mine. The mine, opened in 1991, normally contributes some 110,000 ct/y to Namdeb's annual production but processing the remaining reserves with the existing crushing and treatment facilities had become increasingly difficult. The extension project involves upgrading the existing treatment plant with a wet-crushing system for the extraction of diamond-bearing rock from the wet, clay-rich material along the coastline. The wet-crushing system, the first within the De Beers group, will compliment the existing treatment facility which processes only dry ore, and will allow much of the remaining deposit to be treated as it can handle wet, clay-rich and also cemented ore. Plant construction was due to start in May 2003, with completion scheduled for June 2004, and includes primary, secondary and tertiary crushers, two stages of primary screening and a ball mill.

During 2002, Namibian Minerals Corp. (Namco) substantially raised production to 235,616 ct, a 175% increase over the preceding year's output (85,592 ct), due to the availability of the mv *Ya Toivo*, equipped with the Nam2 seabed crawler mining system, for most of the year. But despite this improved operating performance, Namco continued to suffer serious cashflow problems and the deterioration in its financial position led to the suspension of all mining operations in December 2002 and the subsequent placing of its main subsidiaries into provisional liquidation.

In April 2002, Namco had commenced discussions with its principal shareholder, LL Mining Corp. (LLM), a subsidiary of Israel's Leviev group, its senior lenders (a consortium of banks known as CoB), and the government, for rescheduling of existing debt and for additional financing to fund a recovery programme. Despite concessional support from the government, including an offer to waive the payment of diamond royalties as part of an overall refinancing package, a compromise agreement acceptable to LLM could not be reached with the CoB. This had immediate severe repercussions

as at the beginning of December LLM ceased to advance funds to Namco, which was forced to suspend all operations a few days later. Under the previous rescheduling agreement negotiated in 2001, Namco was making monthly interest payments on the US\$50 million debt owed to CoB, but was due to resume principle debt repayments in March 2003, which could not be met out of existing cashflow. LLM had become Namco's major shareholder as a result of its 2001 financial restructuring, and was also owed US\$12.6 million, debenture holders a further US\$9.4 million, while the Namibian government had purchased shares worth US\$2.6 million in 2001.

Although Namco's sudden collapse was unexpected, in retrospect it appeared to have been inevitable once LLM decided it could no longer afford to keep the company afloat on its own. In the last quarterly report issued by Namco, covering July-September 2002, the company had reported its best-ever quarterly production of 117,000 ct and a US\$96,000 pre-tax profit, the first surplus in over a year. But Namco's chief executive, Greg Walker, warned that in the absence of additional funding the company had "grave concerns" over its ability to maintain production and exploration programmes at requisite levels. Notably, problems with the onboard equipment of its exploration vessel meant that sampling had fallen behind schedule, adversely affecting ability to delineate mining reserves, including new probable reserves. Mr Walker also disclosed that some of the resource included in existing probable reserves was "not suitable for mining with crawler-tractor technology", while its third mining vessel, the only one equipped with airlift mining technology, was out of service pending repairs which the company could not afford without extra funds.

Most of Namco's subsidiaries holding operating and other assets were placed in provisional liquidation during January 2003 but hopes of selling the company as a going concern, rather than liquidating the assets piece-meal, were undermined by its complex structure, with some subsidiaries registered in Namibia, and others in South Africa and the UK. Formal winding up orders were granted in respect of the two UK-registered subsidiaries, Namco Services Ltd and Namco Mark II Ltd; their assets comprised the company's two seabed crawler mining systems, the NamSSol and Nam 2 respectively. In April 2002, De Beers Marine Namibia (DBMN), announced it had purchased the Nam 2 for US\$20 million from KPMG Corporate Recovery, appointed as joint provisional liquidators for the UK-registered subsidiaries, but other sales had yet to be completed as this review went to press. In addition, the provisional liquidation of two Namibian-registered subsidiaries, Namco Namibia and Island Diamonds, was successively extended to June 30 at the request of the local liquidator Investment Trust Co., to provide further time to secure an agreed sale, including the minerals rights and exploration licences.

Namco's three mining licences are held in the name of these subsidiaries and if final liquidation took place, these would automatically revert to the Namibian Government, which would compromise prospects for a sale. Once the mineral rights revert to the government, they would either be cancelled or re-issued to another concern. The liquidator's aim was to secure a scheme of arrangement which would enable the subsidiaries to be taken out of liquidation as part of an

agreed sale. The identity of prospective purchasers for the Namibian subsidiaries had not been divulged as of April 2003, although local mining sources indicated that LLM was believed to be interested in securing the mineral rights so that it could retain a stake in Namibia's offshore diamond industry.

In 2002, Canada's Diamond Fields International (DFI) recovered 25,401 ct in the Marshall Fork feature of its mining licence 111 offshore Luderitz through its joint venture with South Africa's Trans Hex, up from 16,470 ct in the preceding year. Some N\$750,000 was spent by DFI on exploration in 2002, mainly on data capture, processing and re-interpretation. However, operations were suspended on June 30 after Trans Hex unilaterally terminated its involvement in the joint venture, which had been signed in March 2001 for seven years, and under which the South African firm had deployed the first of two planned airlift technology mining vessels, with an annual production target of 40-50,000 ct. Trans Hex, claimed its withdrawal was due to mining results coming in under the projections based on DFI's exploration and sampling data, and led to legal action between the two firms, which was settled towards the end of 2002; Trans Hex agreed to pay DFI C\$800,000, of which C\$480,000 was compensation for terminating the agreement and the remainder as payment for DFI's share of joint-venture diamonds sold by the South African firm. The two companies stated that they did not rule out establishing a new partnership in regard to their respective interests in marine diamonds in the future.

DFI subsequently re-commenced mining operations in December 2002 through a short-term contract with South Africa's Gemfarm Investments, using a vessel equipped with dual 24-inch airlift mining systems. In January 2003, a second contract mining vessel was deployed by Gemfarm, equipped with a single 24-inch airlift system, and DFI predicted a significant increase in recoveries from the combined production of the two vessels. Prior to the suspension of joint venture operations, DFI had negotiated a debt financing facility of up to US\$15 million from Overseas Private Investment Corp. (OPIC), a US Government agency, which was due to be used to purchase a mining vessel for its own mining operations in the larger portion of its concession outside the joint-venture area. However, it was announced that DFI's existing corporate business plan was being reviewed wholesale following the replacement of the existing board of directors at the company's annual general meeting in November 2002, as a result of which its controlling shareholder and founder, Jean-Raymond Boule, took over as both chairman and chief executive officer. The previous board was charged with presiding over the evaporation of DFI's cash flow, with less than US\$1 million in the bank at the time it was replaced, and preparing to mortgage the company's assets to raise the working capital required as a condition of the OPIC loan.

The new board's declared goals include: establishing a realistic schedule for further geophysical mapping and sampling to expand reserves and bring already defined resources into the reserve category for mining; evaluating DFI's financing options through discussions with OPIC; and raising new funds through an equity offering, probably by a listing of DFI on London's Alternative

Investment Market (AIM). As an immediate step, agreement was reached with MIL Investments, a company owned by Mr Boule, to reinstate its US\$2 million promissory note, under which the principal and outstanding interest will not be due until December 31, 2003, unless there is a prior change of ownership in DFI.

Offshore recoveries by a fourth marine mining firm, Diaz Point Exploration, expanded by 50% to 12,683 ct in 2002 (9,479 ct in 2001). Some N\$1.5 million was spent on exploration and development, including the purchase of a new prospecting unit and a field screening plant to work wet gravel, with considerable work carried out to identify and prove additional mineable reserves. The company was restructured during 2002 to include the local empowerment group Omina and South Africa's Mutora Resources, which now hold a majority interest.

Diamond exploration remained intensive in 2002. Offshore, Canadian junior explorer Afri-Can Marine Minerals Corp. reported encouraging initial results from a phase 2 follow-up sampling programme at its joint-venture Block J located some 105 km north of Luderitz. Afri-Can, which is listed on Canada's TSX Venture Exchange, secured working capital for its Namibian exploration programme via a C\$2.5 million private placement in mid-2002. Block J, one of six concessions held offshore Namibia by Afri-Can in partnership with local empowerment concerns, covers a 994 km² area in water depths ranging from 70 m to 167 m; Afri-Can holds a 70% interest and is operator, with 30% held by Woduna Mining Holding, an empowerment consortium with five shareholder firms. The phase 2 sampling, part of a planned three-phase programme on Block J, was carried out in October 2002 by South Africa's Gemfarm Investments at a cost of US\$420,000. Despite having to be curtailed because of adverse weather conditions, the sampling confirmed the diamondiferous nature of Feature 8 on Block J and resulted in the recovery of 84 gem quality diamonds weighing 11.4 ct, the largest of which weighed 0.49 ct, from a total 25 samples collected from a sea-floor area of 365,000 m².

The technical report on the sampling issued in January 2003 identified two main indicated and potentially mineralised zones in Feature 8 covering 42 km²; these comprised marine valley lag gravels adjacent to the basal conglomerate outcrop, and gravel trapped between the boulders of paleo-surf zone 'gravel waves' further offshore – the geological model that had been proposed by the preceding phase 1 sampling programme. The grade in the defined mineralised area was 7.2 ct/100 m³ of screened gravel (1.6 mm screen), which suggested that mining operations had "the potential to be profitable" and justified further sampling work. This conclusion was reached after taking into account the uncertainties of grades estimated from exploration activities versus production performance from the same area, production costs in similar marine environments, and assuming a diamond value of US\$100/ct, well below the Namibian average. It was planned to continue further phase 2 sampling during 2003 with the aim of quantifying the resource potential of Block J as whole.

Afri-Can has yet to conduct systematic exploration activity in its other concessions, held via 28 exclusive prospecting licences (EPLs) and covering 26,500 km² (including Block J). These consist of the shallow water and medium water depth Blocks B, K, M and N, which together with Block J comprise its northern concessions, and the deep water southern concessions (Namibian Gemstones), covering 23,000 km² with water depths from 168 m to over 500 m, whose eastern margin adjoins the western edge of Namdeb's Atlantic 1 concession.

Namibia's four northern regional councils, covering the most populous parts of the country, gained a 6% stake in Afri-Can under a ground-breaking empowerment agreement of May 2002. This involved the transfer of 2.5 million of the company's issued shares to a not-for-profit concern, Ototinana Regional Marine Minerals Exploration (ORMME), owned collectively by the councils. In addition, a 'goodwill grant', equivalent to 1% of annual gross sales, will be payable to ORMME when commercial diamond mining starts. In return, Afri-Can was uniquely granted relinquishment relief by the government in respect of all concessions held by joint ventures with local concerns. This means that for a five-year period its existing concession areas are guaranteed not to be reduced in size, in contrast to the standard terms for EPLs.

The other main area for offshore diamond exploration is along the northwestern Skeleton coast, where several junior mining firms hold EPLs along a 220 km stretch, regarded as the most prospective section. However, there was little in the way of firm information on exploration results published during 2002 and local press reports of potential reserves of billions of carats are clearly exaggerated. Some operations have been dogged by claims of illicit mining, and a government prosecution of two individuals alleged to have carried out unauthorised activities in the Toscanini area revealed a web of competing claims, and ultimately collapsed with the two accused cleared of any wrongdoing. Elsewhere, Australia's Reefion Mining reported the recovery of 264 diamonds weighing 64 ct from 467 t of beach gravels sampled from a 22 km stretch of the coast. The diamonds were of uniform high quality, mainly white and averaging 0.24 ct, with very few inclusions.

Onshore, exploration for kimberlites has continued to focus on the Tsumkwe area of northeastern Namibia, where Australia's Mount Burgess Gold (MTB Namibia) is conducting a major exploration programme. Some N\$10.5 million has been spent on exploration to date, and during 2002 three kimberlite diatremes and other para-kimberlites were discovered as part of a cluster near to the border with Botswana. This was viewed as increasing the probability of discovering a local source for the Tsumkwe surface diamond/garnet anomalies already identified, and Mount Burgess is currently carrying out geophysical and geochemical studies, along with drilling to evaluate and extend its finds.

The Tsumkwe zone falls within the Namibian section of the southern extension of the Angola-Congo Craton, where exploration for kimberlites has been undertaken by several junior mining firms in recent years. Mount Burgess originally discovered a northwest-southeast swathe of kimberlitic

garnets and several macrodiamonds over a 40 km by 15 km area near the village of Tsumkwe; as most of the garnets were travel-worn it was concluded that they represented secondary concentration in a Kalahari-aged drainage, and the company has carried out its work upstream from this fossil drainage.

A second southern craton zone, the Omatako drainage, to the north of Tsumkwe in Kavango region near the border with Angola, contains a secondary indicator-mineral anomaly. A Canadian private company, Motapa Diamonds, has exploration rights there but so far little has been published about the progress or otherwise of its exploration activities. Kimberlite indicators in both zones were originally discovered by the De Beers group in the 1970s when it carried out a systematic collection of stream and soil samples over the whole Namibian section of the craton from the 22^o parallel north to the Angolan border.

Namibia's first diamond cutting and polishing plant, NamGem Diamond Manufacturing Co., has continued to record improvements in internal efficiencies at its Okahandja factory 200 km north of Windhoek; only 2.5% of the workforce are now expatriate, but the increased localisation raised training costs. Polished turnover increased by a fifth with N\$1.2 million derived from sales to local jewellery industry, the balance being sold on the global market to leading polished traders; the size of rough goods supplied by DTC significantly increased over the previous year, enabling the company to produce its first 1.0 ct polished stones. However, operations were negatively affected by the fluctuating exchange rate, suppliers' performance, and funding of a four-month pipeline during 2002; an independent review was to be commissioned in 2003 with a view to restructuring the company.

There was little available information on operations at the three other diamond-cutting plants opened during 2001-02, all of which, like NamGem, have export processing zone status, under which there is no income tax liability for the duration of the project. Two, Namcot Diamonds, owned by Netherlands-based Karmyle Trading and local investors, and Namdiamond Inc., owned by US-Ghanaian investors, are in Windhoek. The fourth, owned by Russia's Mars Investment Holdings and located in Walvis Bay, commenced operation in May 2002 for a reported US\$24 million investment.

Gold and copper

Total gold production in 2002 was slightly below the level of the preceding year at 2,815 kg, of which 165 kg was recovered as a by-product of blister copper at the Tsumeb smelter. The Navachab mine near Karibib, Namibia's only primary gold mine (owned and operated by AngloGold Namibia) achieved its second highest annual production on record at 2,650 kg (2,694 kg in 2001) as well as the best-ever received price for gold sales in local currency. Due to the improved financial returns, evaluation of the viability of the postponed open pit phased expansion project was recommenced during 2002. Additional drilling and improved geological information increased the reserves.

Implementation of the 'Eastern Pushback Project' was approved in September 2002, under which the life of the mine will be extended to at least 2013, and the volume of gold produced more than tripled from 204,000 oz/y to 660,000 oz/y. The project involves extending the open pit by 85 m in length and deepening it by 40 m to new depth of 230 m. Production from the new mining area is due to start in early 2004. However, a very hard footwall ore zone will have to be mined, presenting problems in terms of milling throughput. Ways to cost-effectively obtain better fragmentation in mining operations to alleviate this envisaged problem are under investigation. Navachab has also launched a conceptual prefeasibility study into a further mine expansion project to evaluate the viability of a major pit enlargement, which is not expected to be completed until 2004. This would provide for a probable doubling of the milling rate and extension of the mine's life until about 2020. However, the project would cause a reduction in average grade, requiring the installation of a new processing plant, and water requirements would be substantially increased. In line with approval of the pushback project, Navachab applied for, and was granted, an extension of its current mining licence until 2013.

Production of blister copper and associated products by Ongopolo Mining & Processing (OMP) was substantially lower in 2002 but the company consolidated existing operations and made progress with several developments initiated in 2001. At the Tsumeb smelter, 17,850 t of blister copper, containing 17,567 t of copper metal, along with 12 t of silver and 165 kg of gold, were produced, compared with 27,015 t of blister containing 26,647 t of metal, 18 t of silver and 157 kg of gold in 2001. Production of arsenic trioxide fell slightly from 914 t in 2001 to 880 t. Some N\$600,000 was spent on a renovation programme for the 35,000 t/y Tsumeb concentrator, completed in October 2002; the plant will treat additional ore from the new mining operations being developed at the nearby Tschudi deposit, Tsumeb West and Tsumeb Upper Levels. The concentrator produced an average 1,300 t/mth in 2002 and, with the introduction of hydraulic fill, output is scheduled to rise to 2,500 t/mth during 2003.

Further development work was carried out at the Kombat mine near Tsumeb which, along with the Otjihase mine near Windhoek, will remain the main source of domestic concentrate feed for the Tsumeb smelter. At Kombat, output rose by 31% to 23,836 t of copper concentrates in 2002 and, despite a slight drop in concentrate grade to 27.7%, contained metal production rose to 6,602 t, from 5,480 t in 2001. New reserves are being opened up by the development of the Asis Far West appraisal shaft. Detailed evaluation has indicated possible reserves in excess of 30 Mt, which could be exploited in two years time as a result of the current exploration programme.

Otjihase provided the major source for the supply for smelting operations during 2002; concentrate output was increased by 50% to 39,100 t and, with a corresponding slight increase in grade, output of contained metal rose to 11,208 t (6,912 t in 2001). Production of both pyrite concentrate and sulphur were substantially reduced due to the continuing lack of a major domestic customer pending a decision by Rossing Uranium over the possible construction of a new sulphuric acid plant. Some 4,064 t of dry pyrite and 2,061

t of sulphur were exported to South Africa in 2002 and exports to central African markets could be substantially increased with the construction of a road bridge between Namibia and Zambia across the Zambezi, due to be completed in March 2004. The bridge, between Katima Mulilo in Caprivi region and the Zambian border at Sesheke, will connect with the trans-Caprivi highway to Rundu and from there on to Tsumeb and Walvis Bay harbour. The improved communications with Zambia would also, it is thought, place the Tsumeb smelter in a better position to accept imported concentrates for toll processing and provide additional 'return trip' opportunities.

Development planning work at the Tsumeb West mine was completed in 2002, with production scheduled to have started during the second quarter of 2003. At the Tschudi deposit some 20 km west of Tsumeb, full-scale mining could start during 2004, following the completion of test mining currently under way to determine the most suitable ore recovery method. Test work commenced in October 2002, with overseas technical experts due to continue evaluating the most cost-effective metallurgical processing route over 12 to 18 months. The deposit comprises disseminated copper-pyrite mineralisation in gently dipping sandstone, with a total resource of some 15 Mt at an average grade of 0.9% Cu. The planned mining rate is between 5,000-6,000 t/y and OMP may decide to build a processing plant on site, depending on the test programme results. Planning work for Tschudi was completed during 2002, including design parameters for a 250 x 90 m open pit with a 30 m depth. Initial work involved heap leach testwork on a bulk sample; at a cut-off grade of 0.6% Cu, Tschudi's mineable reserve would be 185,000 t of ore at an average grade of 0.99% Cu and 8.0 g/t Ag.

OMP also completed a preliminary report on the project to recover germanium, zinc and other metals from the accumulated slag dumps of just over 3 Mt at Tsumeb. Metallurgical testing of recovered samples has shown that zinc and other metals could be concentrated into an oxide dust by reduction and fuming using an Ausmelt furnace. A full feasibility study is due by the end of 2003 and, based on prevailing prices, OMP estimates the combined net value of the metals contained in the slag is some US\$1 billion. The project is a joint venture between OMP and the UK's ZincOx Resources, with specialist expertise also being provided by Korea Zinc.

There were renewed indications of interest in the large low-grade porphyry copper deposit at Haib in the extreme south of Namibia during 2002, although firm plans for renewed evaluation and/or development failed to materialise. The most recent data on Haib from the late 1990s when a 650 Mt mineable resource averaging 0.37% Cu was estimated. In July 2002, a heads of agreement proposing Haib's exploitation by bio heap leaching technology was signed by Haib Copper Co. (a company owned by the deposit's original discoverer, George Swanson), BacTech Environmet Corp. of Canada and Mintek of South Africa.

However, later in the year Australia's Rusina Mining announced it had started talks with the Namibian Government to assert its claim to valid title over the Haib deposit. In a letter of September 2002 to the Australian Stock Exchange,

Perth-based Rusina, formerly Great Fitzroy Mines NL (GFM), stated it was hopeful that the negotiations under way would result in the benefits of the involvement of Bachtech/Mintek, with Haib being developed by itself free of what it described as invalid and speculative claims. Rights to Haib were purchased by GFM from Mr Swanson for US\$1 million in 1995 with the consent of the Namibian Government, and a bankable feasibility study completed in 1997 confirmed the viability of an open-pit mine producing 115,000 t/y of cathode copper. However, GFM subsequently shelved further development work due to the weakening of the global copper market.

Zinc

Namibia is set to become a significant zinc producer during 2003, with the commissioning of the US\$454 million Skorpion zinc mine and refinery in the southwest by Anglo Base Metals (Ambase). Skorpion is near the existing Rosh Pinah lead-zinc mine, just north of the Orange River and on the southeastern edge of the *Sperrgebiet*, where exploration for zinc and other base metals has been under way since the area was opened up for limited non-diamond prospecting in 2000. Skorpion has established a sound working relationship with Rosh Pinah through a joint venture company RoshSkor, which among other objectives plans to develop the existing Rosh Pinah mining settlement into a self-sufficient community with improved amenities. Rosh Pinah was due to be proclaimed as a town in mid-2003.

Construction of Skorpion was virtually completed by the end of 2002, including all electricity, water and other infrastructure, with the first metal pour from the refinery scheduled for the second quarter of 2003. It had originally been planned to commission Skorpion in the final quarter of 2002, but start-up was delayed due to a strike in August that year by Namibian construction workers. Although the direct time loss was only 13 days, the real loss was much greater due to site reorganisation and lost momentum. At full capacity, Skorpion will produce some 150,000 t/y of high-grade zinc metal at 99.9% purity. Shipment to export markets will be from Namibia's southern port of Luderitz, where a new cargo and container quay was completed by Namibian Ports Authority (Namport) in 2000. Despite a sharp fall in global zinc prices since Skorpion was conceived, the project manager, Norman Green, stated in February 2003 that although this had reduced the expected profit margin, the project remained viable.

At Rosh Pinah, planned investment in expansion projects had to be deferred for a second year running due to the unfavourable impact of the low lead and zinc prices, and capital expenditure of N\$35 million during 2002 was restricted to essential development work. However, production targets were met by the operating company Rosh Pinah Zinc Corp. (RPZC), in which South Africa's Kumba Resources (formerly Iscor) is the major shareholder. Zinc concentrate output rose by 10% to 77,587 t in 2002, with grade maintained at just under 53%, while contained zinc metal amounted to 41,012 t, up by 30% over 2001. The concentrate also contains appreciable amounts of lead and silver, at 1.78% and 88.8 g/t respectively, although these are not separated out before shipment. In contrast, lead concentrate production decreased by 8% to 24,140 t in 2002. With the concentrate grade maintained at around 49%,

contained lead metal fell by 9% to 11,809 t. Contained zinc averaged 6.93% and silver 691 g/t. Lead concentrates continued to be sold by trader tenders for overseas shipments via Walvis Bay, although with the expansion of facilities at Luderitz the company is investigating a switch to using this port instead.

Uranium

Production by the Rossing mine, the world's biggest open-pit uranium mine near Swakopmund, was 2,751 t of uranium oxide (U₃O₈) in 2002, up by 4% on the preceding year. Profitability also improved, with net earnings by Rio Tinto (on a 69% basis) up by US\$2 million to US\$23 million, although gross turnover (100% basis) fell by US\$3.0 million to US\$112 million. Rio Tinto is Rossing Uranium Ltd's major shareholder with a 69% stake, South Africa's Industrial Development Corp. (IDC) and the Government of Iran each hold a 10% interest, and the Namibian Government 3.5% (which includes a majority of the higher-weighted 'A' voting shares). The government received N\$4.6 million (US\$440,000 at the prevailing exchange rate) in dividends in the 2002/03 fiscal year, up from N\$2.6 million in 2001/02. Although Iran is reported to be developing a nuclear capability, there has been no suggestion that any uranium from Rossing is being used as raw material to supply enrichment facilities inside Iran.

Rossing continues to operate at around 60% of its design capacity, given the continuing moderate global demand and flat pricing structure of the uranium market. However, production is forecast to increase further, by about 5%, in 2003 to facilitate tying-in of a new sands/tailings conveyor system, which is expected to improve the reliability of the process plant significantly. The project commenced early in 2002 and comprises an overland conveyor to replace the tailings pumping system. The conveyor will carry dewatered sands to the top of the tailings disposal area where the sand will be repulped with thickener slimes and then pumped to the designated paddy for disposal.

Capital expenditure in 2002 was N\$54 million, mainly on the sands/tailings conveyor system. Other activities in 2002 included the construction of a new haulage and pit area ramp on the north wall of the open pit; a major fault in the south wall was deemed a major risk with the existing ramp there subject to a possible wall failure. Extensive geotechnical analysis was conducted to assess any impact on mining rates and possible future expansion of the open pit, with results due to be available in the first half of 2003. Test work and evaluation of the ore sorting plant was also continued, but commissioning of a new plant cannot be decided until a business case has been finalised, although a project to place the pilot plant into full production was developed in 2002.

Plans to extend the present life of the mine by enlarging the present open-pit to access additional ore reserves may be shelved if the sharp improvement from the end of 2002 in the foreign exchange value of the South African rand (to which the Namibia dollar is linked at par) proves to be sustained. Rossing's managing director, David Salisbury, disclosed in March 2003 that a reduction in local currency earnings caused by the rand's appreciation against

the US dollar, in which uranium exports are priced, had more than offset a concurrent modest increase in the spot market price of uranium to just over US\$10/lb. He stated that the prevailing exchange rate was very critical to Rossing's viability as the mine lost income when the rate against the US dollar drops. In consequence, he confirmed that the Rossing board would have to decide by the end of 2003 whether to prepare for closure in 2010, as provided for under the current mining plan, or extend its life well into the next decade through substantial capital investment.

Although reserves are sufficient to last until 2020 at the present below-capacity production levels, the open pit would need to be enlarged to access additional ore, causing a large increase in volumes of waste rock and tailings deposits. This would have a significant environmental impact, and consultants have been engaged to conduct an assessment. If the decision is made that investment in expansion of the open pit would not be viable, a closure plan would come into effect to make the mine safe and remove all plant structures. The total cost of plant demolition, tailings dam cover construction, seepage control and transition packages for Rossing's 800 employees is estimated at N\$284 million (US\$36 million) and consultations have been initiated with community representatives on options to mitigate the depressant impact of closure on Swakopmund and Arandis, where most employees live.

Despite Rossing's financial concerns, there appears to be a reasonable prospect of the development of a second, smaller, uranium mine at the Langer Heinrich deposit, located 80 km from Swakopmund to the southeast of Rossing, by Australia's Paladin Resources. Western Australia-based Paladin, which also owns the Kayelekera uranium deposit in Malawi, purchased Langer Heinrich, a calcrete-type deposit, from another Australian company, Aztec Resources (formerly Acclaim Uranium), in August 2002 for an undisclosed cash payment. If a commercial mining development takes place, Paladin will also pay Aztec a production royalty of US\$0.12/kg of yellowcake product sold and delivered to a buyer. Aztec had completed a prefeasibility study in 1999 indicating further work was justified to evaluate the development of an open-pit mine producing some 10,000 t U₃O₈ over a ten-year life. However, it shelved the project in 2000 because of the depressed uranium price and subsequently decided to divest from all its uranium assets in line with a new corporate policy.

Paladin gave its main reason for acquiring Langer Heinrich as the subsequent recovery in the uranium price to just below the "critical" US\$10/lb level and improving medium-term prospects. It announced it would completely re-analyse all preceding work in order to produce significant optimisation and a more streamlined basis for determination of a cost-effective bankable feasibility study. The results of this pre-feasibility study were announced in February 2003, and indicated that Langer Heinrich contains a geological resource of 50 Mt averaging 0.06% U₃O₈, significantly higher than Rossing's grade. The mineable resource was estimated to be 10.1 Mt at 0.11%, containing 11,200 t of recoverable uranium at a 344 ppm cut-off, and this forms the basis of the project prefeasibility assessment and financial modelling.

Paladin described the project as robust at a price of US\$14/lb U₃O₈, with the mineable resource sufficient for a ten-year mine life producing 1,000 t/y U₃O₈ at a capital cost of US\$37 million and a low operating cost of US\$6.54/lb. Paladin estimates that securing long-term supply contracts would provide a 25-30% premium above the prevailing spot price and on this basis predicts the project would generate a financial return by year three. The company is proceeding with a 12-month bankable feasibility study costing some US\$2.5 million, for which funding was due to be finalised in mid-2003, with South Africa's Fluor Daniel selected to manage the study.

Other minerals

The most important non-metallic minerals mined during 2002 continued to be fluorspar and salt, with production of the latter increasing substantially. Tin and tantalite mining may resume in the near future with the reopening of a previously mined deposit in the northwest. Quarrying of dimension stone (mainly marble and granite) and semi-precious stones (amethyst, blue-lace agate, rose quartz and tourmaline) continued at a number of locations, chiefly in west-central and southern areas. Most dimension stone is exported as unworked blocks, predominantly to the Italian cutting industry, while semi-precious stones are mainly recovered by small-scale miners.

The bulk of Namibian salt output comes from the evaporation of seawater in coastal brine pans at Walvis Bay and Swakopmund. According to recorded statistics, Namibia is the biggest salt producer in sub-Saharan Africa (most African salt production is informally harvested), predominantly of coarse salt for supply to South Africa's chemical industry. Coarse salt output rose by 9% to a record 606,729 t in 2002, mainly due to the completion of a capacity expansion programme by Walvis Bay Salt Refiners, which raised production by 10% to 552,000 t. Actual sales were 580,000 t, mainly to South Africa's chlor-alkali industry, while exports to West Africa and the Middle East rose 28% and a further increase is anticipated for 2003. Production of refined, coarse and rock salt at Salt Co.'s facilities near Swakopmund totalled 70,000 t in 2002, down 7% on the preceding year, of which 54,729 t comprised coarse salt, 9,640 t refined salt and 5,631 t rock salt. The company spent N\$12 million in 2002 on a capital refurbishment programme. A new company, Cape Cross Salt, produced and sold 7,323 t of coarse salt and 836 t of rock salt in 2002. The company was established in 2001 and is partially financed by the government's Minerals Development Fund. Further progress will partly depend on a marketing campaign under way in Angola, Democratic Republic of Congo (DRC), Zambia and West African markets.

Production of acid-grade fluorspar concentrate by Okorusu Fluorspar's mine near Otjiwarongo was virtually unchanged on the preceding year at 81,084 t, although this was some 4,000 t below the target of 85,000 t. This was mainly due to lower than expected recoveries in the flotation process as a result of excessive amounts of phosphate in material from the B orebody. In addition, a significant loss of production occurred due to the mining company's inability to gain access to part of the area of its mining licence which it does not directly own because of an ongoing dispute with the surface rights owner. Mining of

the B orebody will remain restricted until a compensation agreement with the landowner is concluded and the Mineral Ancillary Rights Commission has been approached to mediate a settlement. To compensate for the shortfall from B orebody, alternative strategies, including revised ore-blending schedules for the concentrator, had to be devised. However, the company achieved its 2002 shipment target of 90,000 t, with 90,216 t exported, compared to 74,870 t in the preceding year. During 2003, sales to Okorusu's parent company Solvay are scheduled to rise to 95,000 wet tonnes and further increase to the planned mine capacity of 100,000 t in 2004.

An extensive orebody definition exploration programme on the A and C orebodies was completed during 2002, with revised 'economic shells' due to be finalised for both pits during the first half of 2003. Exploration will also focus on the B orebody extensions to complete a similar exercise, and once this is completed a life-of-mine study is to be carried out. Currently it is believed that reserves are sufficient for 15 years at a production rate of 100,000 t/y; although open-pit mining will continue for a number of years it is expected that eventually mining will go underground. In 2001 a possible new deposit had been located at Omburu, near Omaruru, and an initial exploration programme and environmental baseline study were completed the following year. An exploration drilling contract was also awarded, with work due to start in the first quarter of 2003, after which a feasibility study will be conducted.

In 2002, the old Three Aloes tantalite mine some 10 km south of Uis in northwestern Namibia, was acquired by a subsidiary of Central African Mining and Exploration Co. (CAMEC). Tantalite-bearing reserves of some 7 Mt have been delineated, with N\$6 million spent on plant upgrading in 2002, with the aim of producing around 7 t/mth of tantalite and 6 t/mth of tin. The company is also re-investigating other nearby deposits, including the Goantagab and Strathmore tin-tantalite pegmatites. However, mining at the small Tantalite Valley deposit near Warmbad in the south remained in abeyance, following the suspension of operations at the end of 2001 owing to a sharp fall in the global price of tantalum. Efforts by the owner, Tantalite Valley Minerals (TVM), to find a new mining partner to help raise additional funding for further development were under way at the end of 2002. The deposit contains some 338,000 t of proven reserves located in niobium-tantalum mineralised pegmatites at an estimated average grade of 434 ppm (0.04%) Ta₂O₅.

A new small mining operation at the Aminuis sepiolite deposit, near Gobabis in eastern Namibia, commenced in 2002, following re-evaluation of the resource by Afhold Namibia. As a material with a high degree of absorbency, sepiolite is in demand as a filler, and as the main ingredient for cat litter. Exports were initially to be directed at the South African market.

Exploration

The level of prospecting activities was somewhat reduced in 2002, with a decrease in the main categories of mineral exploration licences applied for and granted by the Mining Commissioner's office. Compared with the record 583 non-exclusive prospecting licences issued in 2001, the number fell to 379 in 2002, and the number of exclusive prospecting licences (EPLs) issued fell

by over half to 70, down from 160 in 2001. However, the number of new mining licence grants rose to nine, from three in 2001, and seven exclusive reconnaissance licences were issued in 2002, three more than in 2001. The reduction in issues of new prospecting licences was mirrored by a decrease in exploration expenditure by Chamber of Mines of Namibia (CMN) members, representing the majority of companies active in the country, to N\$146 million (US\$14 million) in 2002, down 41% from the record N\$249 million spent in the preceding year and the lowest level since 1998. In US dollar terms, exploration spending was down by just over half, due to the depreciated annual average exchange rate of the South African rand/Namibia dollar in 2002. As in recent years, offshore diamond prospecting, inclusive of equipment costs and trial sampling operations, accounted for the bulk of exploration spending.

Part of the reason for the decline was a subsiding of the upsurge in exploration activities generated by the opening up of the vast Diamond Area No.1, the *Sperrgebiet*, to non-diamond exploration in 2000. In its 2002 annual report the CMN notes that “companies have now established themselves and settled down to implement their various exploration programmes, and, essentially, expenditures have been somewhat reduced”. Highlights included expenditure of N\$16 million by Ambase Exploration on prospecting for additional zinc oxide reserves in the northern extension of its *Sperrgebiet* licence area. Ambase also continued exploration in northwestern Kunene and northern Oshikoto regions but with no significant discoveries reported. BHP Billiton, which also holds prospecting licences in the *Sperrgebiet*, scaled down its operations in 2002, working through Rio Algom Exploration Inc. The company spent only N\$1.3 million in 2002 but the CMN reports that its interest in Namibia remains high. Avdale Namibia, which holds three EPLs between Otjiwarongo and Otavi, spent some N\$5 million in 2002, predominantly on defining the extent of the Otjikoto gold deposit discovered in 2001. Elsewhere Cominco, Kumba Resources and Westport resources continued their activities on activities in the *Sperrgebiet* and near Rosh Pinah, while several smaller projects, which had lain dormant for some time, received renewed attention during 2002.

The local mining industry remains concerned at the continuing uncertainties caused by access/rights disputes between landowners, mining and exploration firms, because of the rapidity with which such disputes become ‘locked’ and are transferred to court proceedings, entailing inevitable delays in resolving the matters concerned. Under Namibia’s Minerals Act, a land owner has the right to object to operations by a licence holder, and in the event of an unresolved dispute, the matter can be referred to the Minerals Ancillary Rights Commission (MARC), which has powers to set compensation levels. In practice, land-owners have preferred to resort to court action, in part because of uncertainty as to the basis on which the MARC would reach its decisions. Thus, long drawn-out litigation between Northbank Diamonds, in which Trans Hex Namibia and the Lazare Kaplan Inc. of the US each holds a 50% interest, and Aussenkehr Farms, in respect of the former’s EPL on the Orange River north bank, was not fully resolved during 2002. Although in June 2002 the Windhoek high court ruled in Northbank’s favour, an appeal to Namibia’s

Supreme Court was subsequently lodged by Aussenkehr, which, as of May 2003 had yet to be heard. The judge dismissed an application by Aussenkehr, Nagrapex and seven other parties involved in the production of table grapes for export to ban further exploration and sampling by Northbank on the grounds that dust generated by its activities would harm crop quality. The appeal is expected to take up the judge's accompanying comment that the expanding grape-growing sector had contributed to Namibia's economic development through employment creation and the generation of foreign exchange earnings, whereas Northbank had yet to demonstrate its capacity to achieve the same benefits.

The CMN's standing committee on prospecting and the environment focussed on issues relating to proposed new environmental legislation during 2002. The committee was appointed by the Ministry of Environment and Tourism as consultants to draft standard guidelines for environmental impact assessments, and completed this exercise. A number of mining and exploration firms also made substantial contributions to a Land Use Plan for the *Sperrgebiet*, drawn up under the auspices of the Ministry of Environment and Tourism, including the designation and classification of sub-regions. As only a small part of the 26,000 km² area, concentrated along the coast of the southwestern Namib desert, has actually been used for mining, and there are no permanent settlements apart from the diamond-mining town of Oranjemund, most of the *Sperrgebiet* has remained a pristine wilderness. An environmental study and management model is considered essential to ensure that future developments, for example in the tourism sector, do not damage the fragile ecology. A draft report completed by Walmsley Environmental Consultants in mid-2002, recommended the *Sperrgebiet* should be divided into six zones, subject to specific management regimes, in several of which, including a Nature Reserve/Wilderness Area, mining would only be permitted, if at all, subject to strict environmental controls.

Table 1: Diamond production ('000 ct)

	2001	2002	% change
Namdeb	1,385	1,276	-7.9
of which:			
Onshore ^a	743	697	-6.2
Offshore ^b	543	513	-12.1
Beach & marine contractors	99	66	-33.3
Other offshore producers ^c	111	274	146.8
Total	1,495^d	1,550	3.7
of which:			
Offshore recoveries	753	853	13.3
% recovered offshore	47.7	55.0	-

a Includes Mining Area No.1, Daberas and Elizabeth Bay.

b Recoveries from the Atlantic 1 deep-water concession mined by De Beers Marine Namibia (DBMN).

c Mainly Namibian Minerals Corp. (Namco).

d Does not add precisely due to rounding.

Table 2: Namibian Mineral Production (t except where stated)

	2001	2002
Diamonds ('000 ct)	1,495	1,550
of which marine	753	853
Uranium oxide	2,640	2,751
Gold (dore/blister) (kg)	2,851	2,815
Silver	12	18
Copper (blister 99% Cu)	27,015	17,850
Lead (conc. 30% Pb)	26,182	24,140
(contained metal)	13,025	13,190
Zinc (conc. 52% Zn)	70,610	77,587
(contained metal)	31,803	42,685
Pyrite (conc. 50% S)	56,994	3,633
Arsenic trioxide (75% As)	914	880
Fluorspar (97% conc)	81,245	81,084
Salt (coarse)	558,441	614,052
(rock)	6,400	6,467
(refined)	11,250	9,640
Value (N\$ million)^a	2001	2002
Diamonds	4,507	5,604
Other minerals	1,673	2,106
of which:		
Gold	120 ^b	160 ^b
Copper	201 ^b	115 ^b
Zinc	133 ^b	137 ^b
Uranium and other	1,673 ^b	1,694 ^b
Total	6,179	7,710
Value (US\$ million)	718	731

a Export sales revenue.

b estimated.

Within report sources: Bank of Namibia; Central Statistics Bureau; Chamber of Mines of Namibia; De Beers SA; Namibian Minerals Corp. (Namco); Rio Tinto.