
# PAPUA NEW GUINEA

# DEPARTMENT OF MINING

## INFORMATION BOOKLET
## 2003

# 1. CONTENTS




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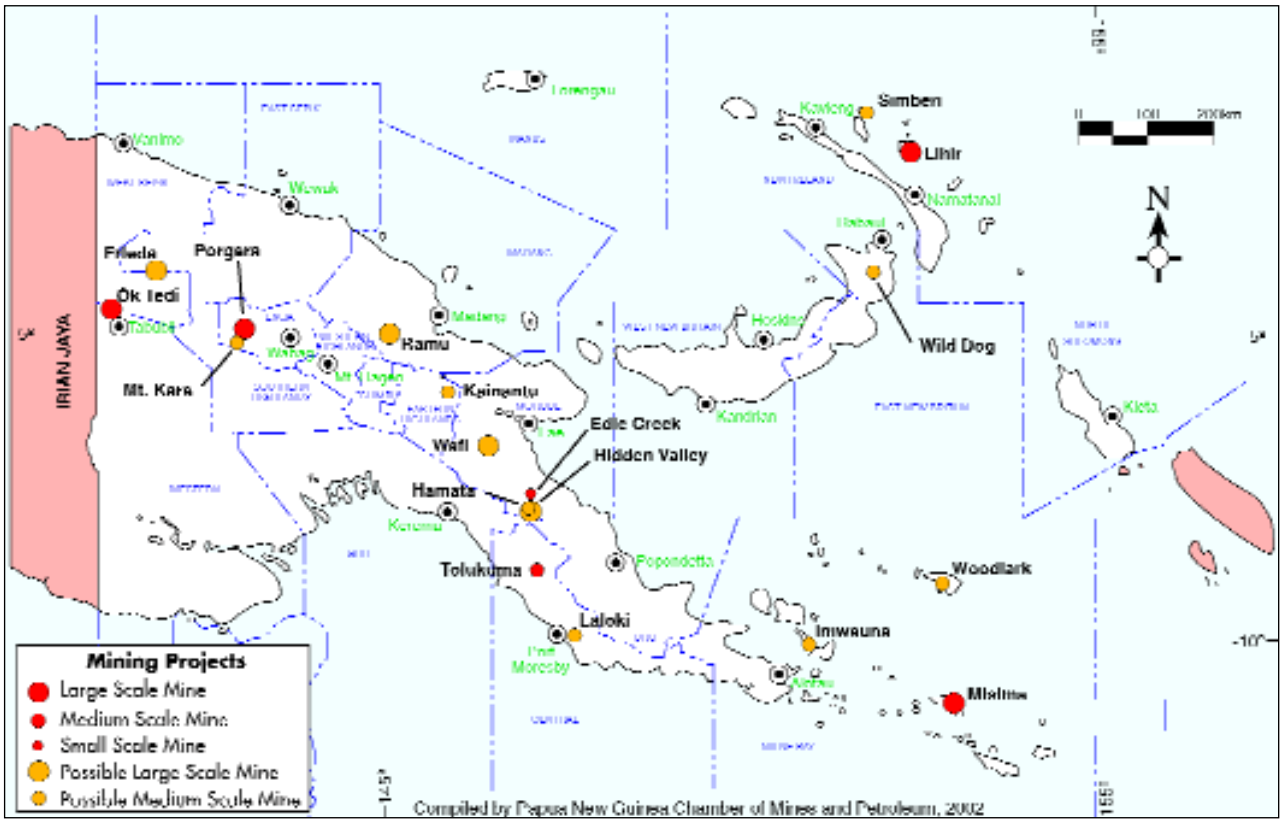
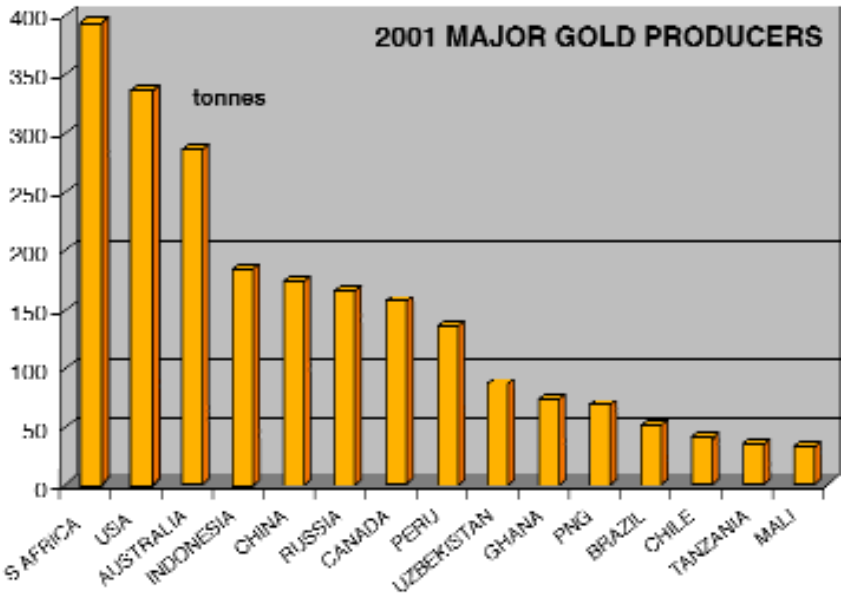
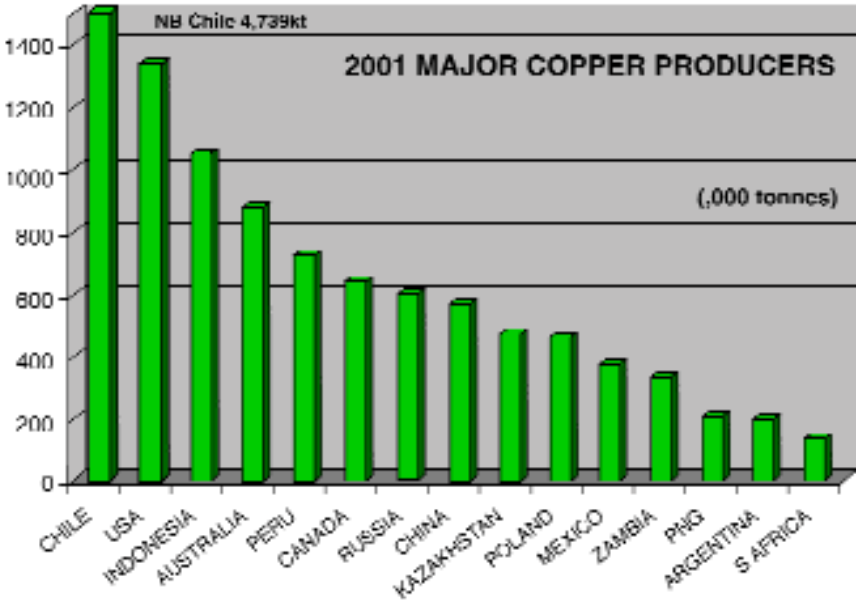


# 1. INTRODUCTION

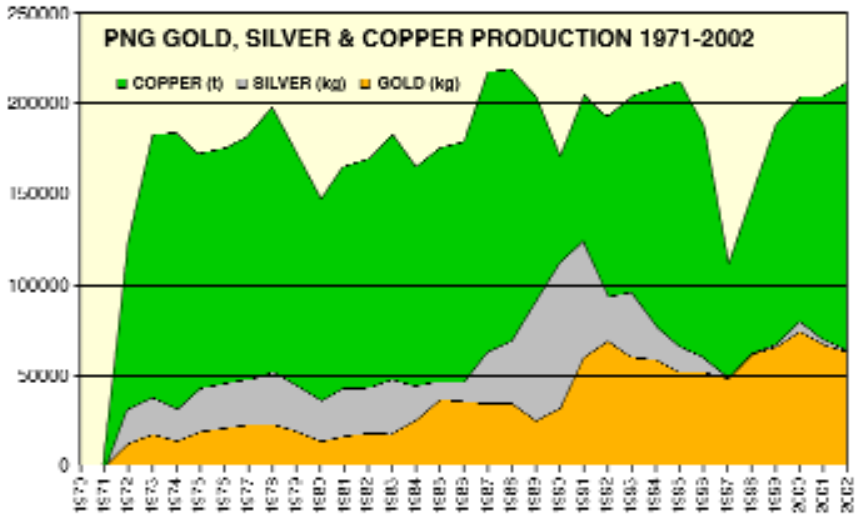
Systematic exploration of Papua New Guinea commenced in the 1960s with attention largely directed towards finding porphyry copper deposits. By the mid—1970s, four world class deposits and several smaller systems had been discovered. In the 1980s, attention shifted to gold and exploration of both previously known and virgin areas resulted in the recognition of two deposits each containing more than 200 tonnes of gold and numerous smaller deposits of economic interest.




The presence of four major mines, several incompletely tested advanced projects and their under-explored surrounds, abundant, and as yet unexplained, geochemical anomalies within vast tracts of geologically favourable rocks supports the notion that PNG is a promising country for gold and copper. It has ranked as the 11th largest gold producer in the world over the last few years and 13th in the world in terms of copper production, with a very real potential to exceed the present production level. In addition, silver is a commercial by-product from most of the mines. It is not surprising then that almost all exploration and mining carried out within PNG is, and has been, for gold and copper.



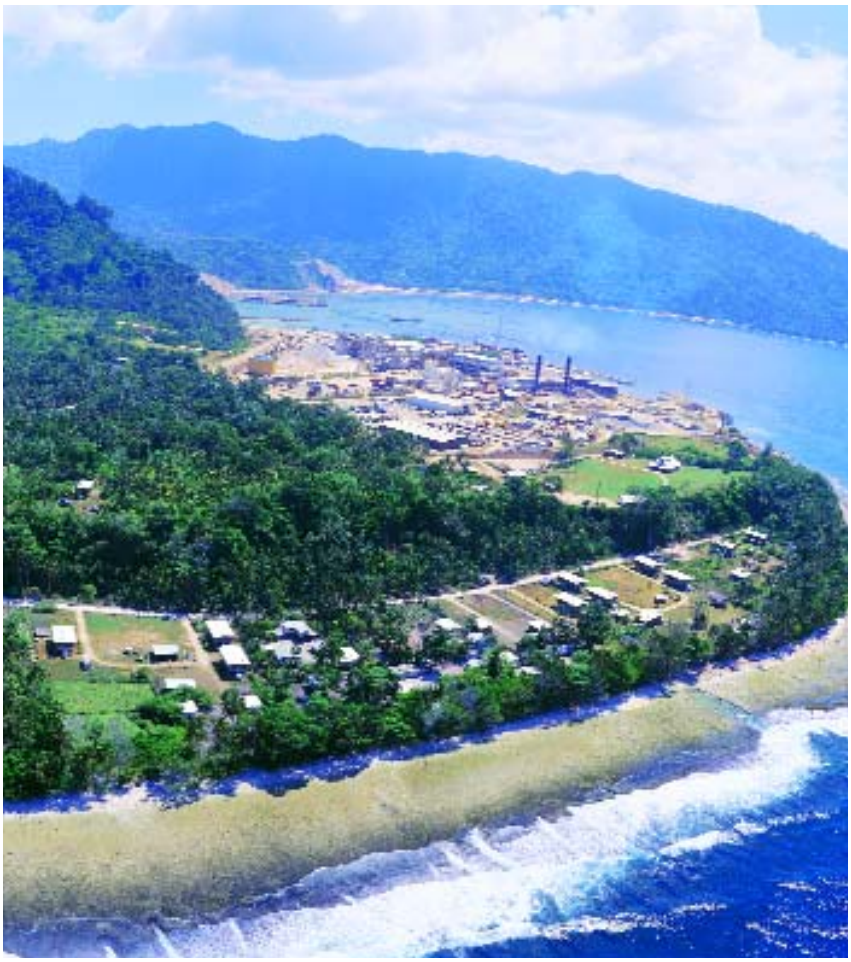

Mineable reserves of nickel, cobalt and chromite have been identified but remain to be exploited. Sizeable mineral sand prospects are known to occur but



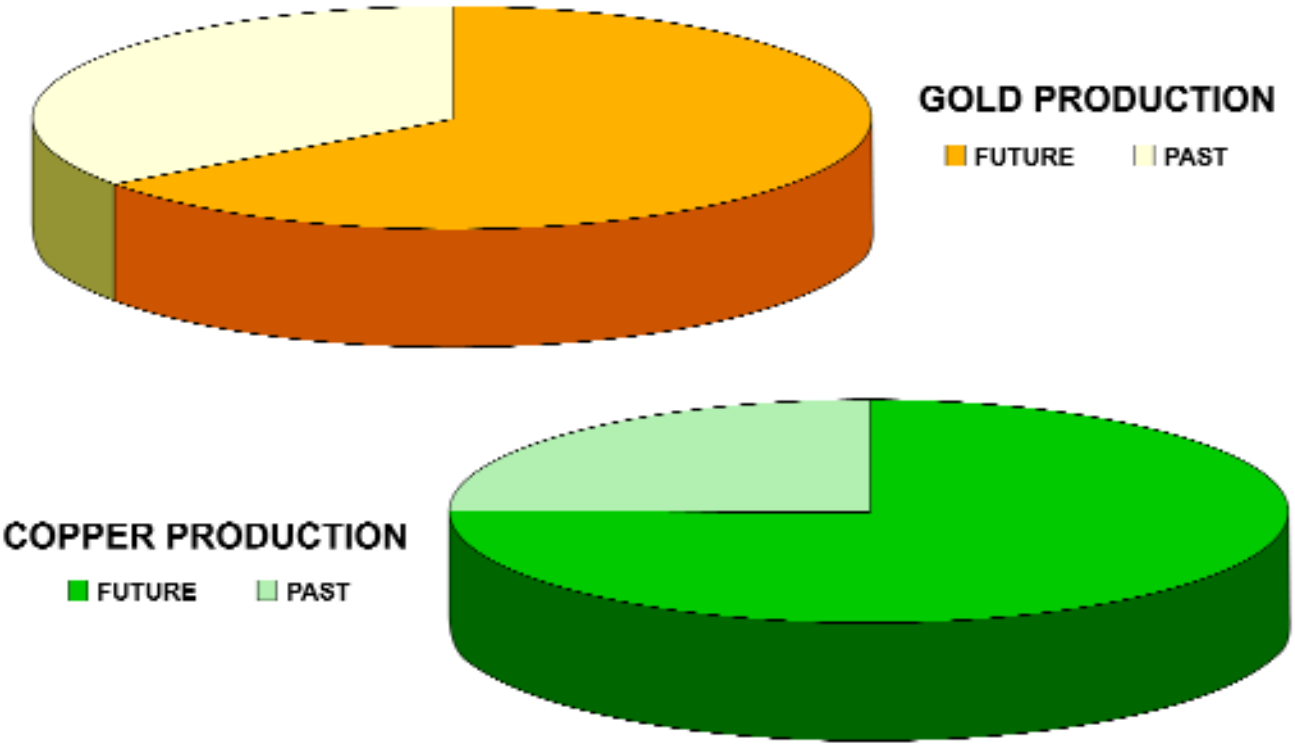
have not received much exploration attention over the last 20 years. Manganese has been mined in a small way in the past.

All of the mining activity undertaken since 1970 has produced approximately 1,100 tonnes of gold, almost 2,000 tonnes of silver and over five million tonnes of copper.

Papua New Guinea still has approximately 2,000 tonnes of gold, 3,064 tonnes of silver and 15 million tonnes of copper in undeveloped resources. This is more than twice the amount already mined! The industry is far from over; it is in need of promoting and incentives to move it along. ■



*Lihir processing plant*



# 2. INVESTMENT PROMOTION AUTHORITY (IPA)

The "Investment Promotion Authority" (IPA) is established by the Investment Promotion Act which is the most important business law for any investor in the country. Compliance with the requirements of IPA is a prerequisite for any investor intending to engage in mining business in the country. The Authority's (IPA) functions are;

- to provide information to investors in the country and overseas;
- to encourage and facilitate investment in the country by assisting investors to obtain all necessary licences, compliances and approvals;
- to provide a system of certification of a foreign enterprise and to require that a foreign enterprise may only carry on business if so certified;
- to monitor the activities of foreign enterprises and other functions as specified in the IPA Act.

**All foreign enterprises (either individuals or companies) must be certified by IPA prior to carrying on business in PNG.** This requirement for certification is contained in the IPA Act. An overseas company that commences business in PNG must also apply for registration of its business with the Registrar of Companies, which is an office within the IPA establishment. Both certification and registration may be done simultaneously. Foreign

*Exploration drilling*

Investors must also be aware that there are certain business activities that are restricted to citizens and national enterprises only and there are severe penalties for non-compliance with the Act.

The IPA also administers the *Companies Act 1997, Securities Act 1997, Associations Incorporation Act, Business Names Act, Business Groups Act and Trademarks Act.* ■

# 3. THE GEOLOGICAL FRAMEWORK OF PNG

PNG may be divided into two stratotectonic provinces (Figure 1).

The **Fly Platform** is floored by the Australian cratonic basement, which is overlain by relatively flat lying Mesozoic to Quaternary, largely sedimentary sequences.

The **New Guinea Thrust Belt** has been thrust over the Papuan Fold Belt. The New Guinea Thrust Belt consists mainly of thrust—stacked medium

pressure slate to gneiss grade metasedimentary and metabasic igneous rocks, minor high-

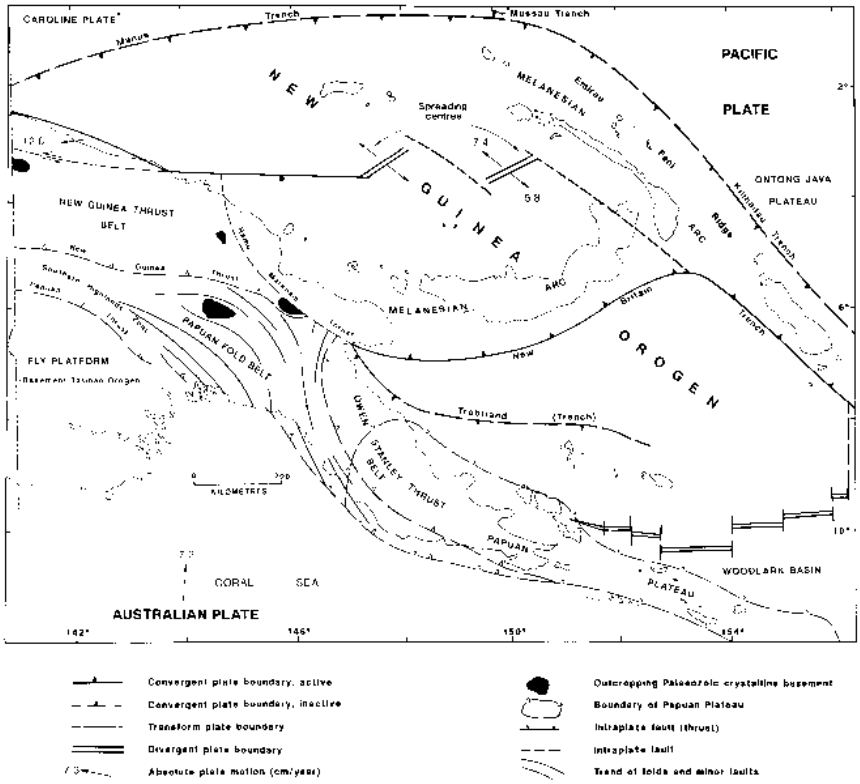



Fig. 1—Basic tectonostructural subdivisions of PNG (after Rogerson et al., 1987b).

The **New Guinea Orogen** consists of variably deformed sedimentary and/or metamorphic rocks (with variable protoliths), volcanics and intrusive rocks. It includes island arcs and intervening small ocean basins.

The **Papuan Fold Belt** consists of shallow foreland thrust – fold features within the thick Miocene carbonate—dominated sedimentary sequences.

pressure metabasic rocks. The thrust stack is surmounted by the late Cretaceous-Palaeogene April and Marum Ophiolites in the south, and by Eocene-Oligocene ultramafics, gabbro and basalt in the north (Torricelli "Intrusive" Complex). The North New Guinea Basin (including the Aitape sub—basin) is a late Miocene to Quaternary successor basin developed at the northern margin of the thrust belt.

The **Owen Stanley Thrust Belt** has been thrust southwestwards over the Papuan Fold Belt along a fault not presently defined in most areas. The thrust belt consists of cleaved Cretaceous to Miocene metasediments of the **Papuan Stratotectonic Province** surmounted by high pressure metabasic rocks of the **Solomon Stratotectonic Province**. An Oligocene—Quaternary successor basin, the Cape Vogel Basin, is developed on the northern side of the belt.

The **Melanesian Arc** consists primarily of the New Britain, Bougainville, New Ireland, and the Admiralty Islands. Eocene—Oligocene basic to intermediate volcanics, intrusive rocks and minor sediments form the oldest rocks in the arc. During the Miocene and early Pliocene, volcanism waned and thick carbonate sequences were deposited on the volcanics. Largely effusive calc-alkaline and minor tholeiitic igneous activity began in Pliocene times and continues today on New Britain and the Umboi - Manam island chain.

The Tabar to Feni island chain, extending northwest from Bougainville, lies NE of New Ireland. It consists of alkaline to per alkaline Pliocene—Quaternary intrusives and lavas believed to be related to deep crustal fracturing. Thick Miocene—Pliocene sedimentary sequences occur between New Ireland and the Massau to Tanga Islands.

The **Ontong-Java Plateau** is separated from the Outer Melanesian Arc by a now inactive trench which failed during mid Miocene times due to its inability to subduct thick Ontong—Java Plateau crust. The Plateau, generally less than 2000m in water depth, consists of ocean floor basalt overlain conformably by late Cretaceous micrite and Cainozoic limestone. A 40 km thick crust is believed to underlie the Plateau. ■

*Underground stope preparation*

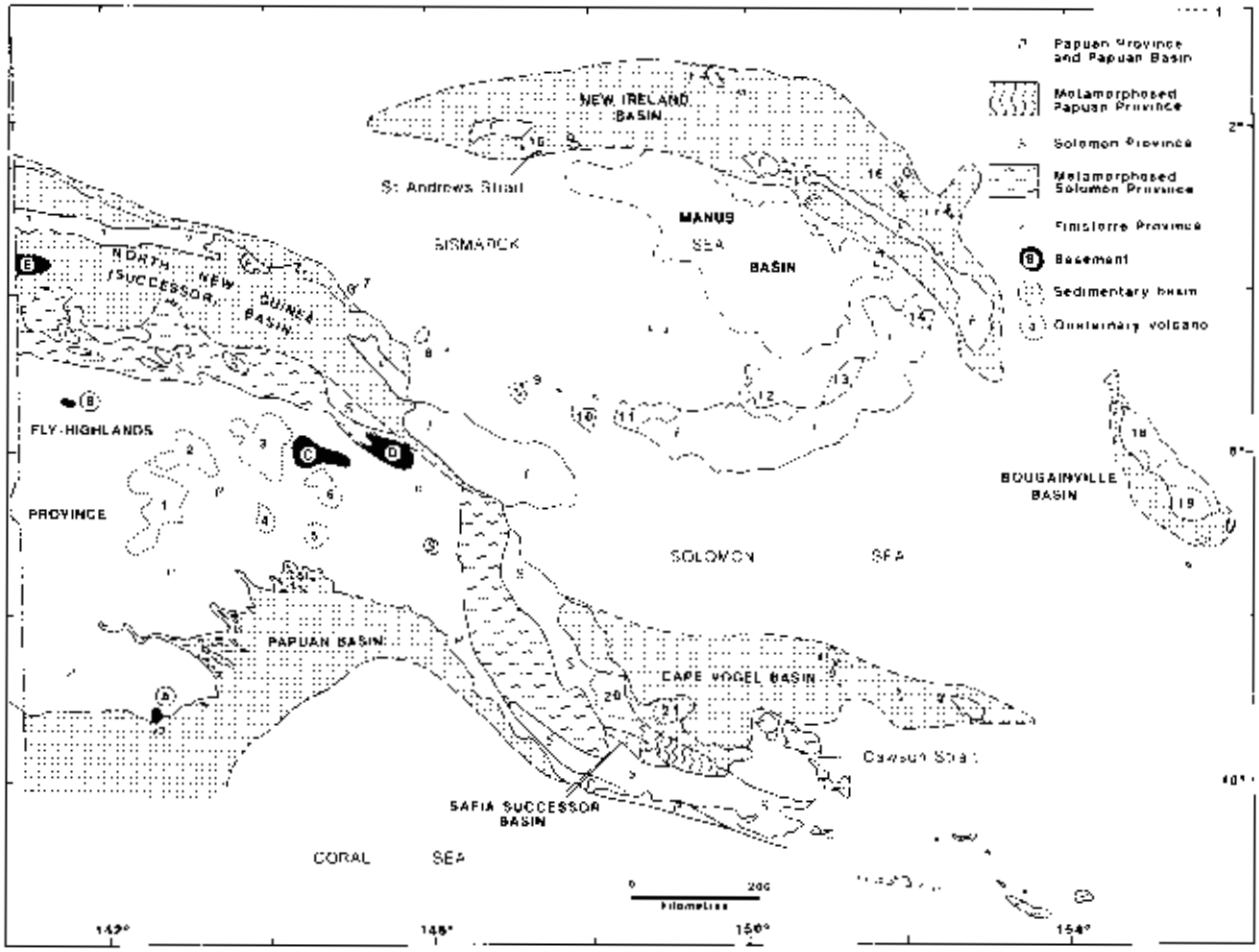



Fig. 2—Present approximate position of Papuan, Solomon and Finisterre stratotectonic provinces. The Papuan Basin is the largest part of the Papuan Province, which extends offshore. Other sedimentary basins are also shown. **Basement blocks**: A=Agaramuba inlier; B–Strickland granite; C–Kubor slab; D–Goroka slab; E–Emanab block. **Pliocene-Quaternary volcanoes**: 1. Bosavi. 2. Sisa. Doma Peaks, Kerewa: 3. Giluwe, Ialibu, Hagen: 4. Murray; 5. Duau: 6. Karimui, Crater: 7. Manam; 8. Karkar: 9. Long Island: 10. Umboi; 11. Langila. Andewa. Schrader; 12. Talasea. Dakataua. Pago: 13 Ulawun. Bamus. Hargy; 14. Rabaul; 15. Tuluman–St Andrew Strait; 16. Tabar: 17. Lihir; 18. Balbi. Bagana: 19. Loloru; 20. Lamington–Managalese Plateau; 21. Victory. Trafalgar.

# 4. GEOLOGICAL ENVIRONMENTS PERMISSIVE FOR DEPOSITS IN PNG

**Oceanic crust and related environments** include not only the igneous rocks of the upper mantle and oceanic crust but also the supradjacent deep marine sedimentary veneer. Obducted ophiolite fragments are common on the PNG mainland and are particularly common on the Papuan Peninsula (Davies, 1971 and 1980), Papuan islands (Louisiade Archipelago and D'Entrecasteaux Islands — Williamson and Rogerson, 1983) and in a belt just south of the Ramu-Markham Fault and Sepik River (Jaques, 1981 and Davies, 1982). A further ophiolite has been tentatively identified in the Wewak-Torricelli-Bewani Mountains area (Palaeocene—Eocene Bliri Volcanics and associated gabbros and ultramafics). The Papuan Peninsula in particular has extensive areas of obducted oceanic or marginal basin sea floor. Both Cretaceous and Paleogene age ophiolites are present (Williamson and Rogerson, 1983); comprising ultramafics and gabbros (together the Papuan Ultramafic Belt) and basalts (Cretaceous Goropu Metabasalt and Palaeogene Kutu and Lokanu Volcanics). Near Port Moresby, the Sadowa Gabbro and associated basaltic extrusives possibly constitute another ophiolitic slab. Palaeogene sediments in the Port Moresby area that host exhalative Mn deposits and Besshi-type massive sulphides were probably hemipelagic sediments resting on basalts prior to thrust deformation. Eocene sediments (Asai Shale) that surmount the Marum Ophiolite near Bundi are analogous. Isolated klippen of Paleogene ophiolite occur from Bundi westward to the Frieda area (Rogerson et al, 1987; Davies, 1982).

**Granitic intrusions and metamorphic rocks** of probable Palaeozoic age form basement to the Papuan Basin and at least part of the Sepik sub-basin. Granitic basement highs occur between Mt Hagen and Kundiawa (Kubor Granodiorite and associated metamorphics — Bain et al, 1975) and near Kainantu (Mt Victor Granodiorite — Rogerson et al, 1982). The Bena Bena and Goroka Metamorphics which crop out between Kainantu and Goroka are intruded by andalusite — bearing granites (Rogerson et al, 1982). This assemblage also probably constitutes basement. Work has shown that the Amanab Metadiorite is Permian in age and is presumably equivalent to the Kubor Granodiorite. Foliated granodiorite and associated metamorphics form the cores of some islands in the D'Entrecasteaux Group (Amawa, Gudanai and Morima Metamorphics-Davies, 1973) and on Misima Island in the Louisiade Archipelago (Williamson and Rogerson, 1983). Cassiterite has been recorded from the D'Entrecasteaux Islands (Davies, 1973) and we believe that some of the foliated granodiorites and metamorphics may represent deformed Palaeozoic continental crust of the Papuan Plateau.

Metamorphic rocks occur beneath ophiolite and unmetamorphosed Miocene sediments and volcanics in the area south of the Sepik River between the Irian Jaya border and 1440 (Rogerson et al, 1987). Shallow dipping thrust faults separate the metamorphics from overlying rocks. Both high pressure (Tau Blueschist) and medium pressure metamorphics (Salumei Metamorphics, Ambunti Metamorphics) are represented. Geological field work has shown that both metabasic and metasedimentary rocks ranging from slate to gneiss grade occur. The lower grade slates and phyllites at least can be shown to be the metamorphic equivalents of Mesozoic rocks occurring to the south (Wahgi Group equivalent). A similar structural pattern is revealed in the Papuan Peninsula, where the Papuan Ultramafic Belt structurally overlies the Emo (metabasic) and Kagi (metasedimentary) metamorphics across a thrust (Pieters, 1978). The Kagi Metamorphics are also partly Mesozoic in age. Equivalents of these metamorphics crop out on Misima, Tagula (Sudest) and Yela (Rossel) Islands (Williamson and Rogerson, 1983).

Shallow dipping thrusts, marked by narrow, tabular, brecciated, permeable zones within

metamorphics or plutonic igneous rocks, are possible targets for gold exploration in PNG. Although targets may be small, a large part or the mainland cordillera is dominated by sub—horizontal thrusts.

**Calcalkaline hypabyssal intrusions and volcanics** are extremely common in PNG and occur in the New Guinea Islands, the mainland and in the Louisiade Archipelago. A calc-alkaline volcanic arc developed during late Oligocene- Pliocene times on the Australian plate margin running through mainland PNG (Dow, 1977). Miocene to Pliocene dioritic intrusions, andesitic volcanics and tuffaceous rocks are common in a belt stretching from the Irian Jaya border (Ok Tedi Wogamush Formation; Frieda Complex), through the central and eastern highlands (Maramuni Complex), Porgera intrusives, Bismarck Intrusive Complex, Akuna Complex, Yaveufa Volcanics Elandora Porphyry, Yandera intrusives and onto the Papuan Peninsula where numerous small diorite stocks intrude metamorphics (eg. Edie Porphyry).

The New Guinea Islands (Bougainville, New Britain, New Ireland and Manus Islands) consist largely of Eocene—Recent calc—alkaline island arc volcanics and intrusives (Dow; 1977). The Eocene — late Oligocene basement complexes (Kieta Volcanics, Bougainville; Baining Volcanics, New Britain: Jaulu Volcanics, New Ireland; Tinniwi Volcanics, Manus Island) have been poorly mapped. They are also intruded by many younger calc-alkaline stocks. In contrast to the mid—Tertiary mainland PNG arc, the New Guinea Islands arc developed on Palaeogene oceanic crust. Calc—alkaline to alkaline magmatism and volcanism still continues on most of the islands, except New Ireland.

**Alkaline intrusives and associated volcanic rocks** occur in the Tabar-Feni island chain (Johnson et al., 1976), the Louisiade Archipelago — Milne Bay area and near Mt Hagen (Mt Pugent Stock — Rogerson and Williamson, 1985). Domal microsyenitic and monzonitic stocks are at least spatially related to young volcanic centres and gold mineralisation in the Tabar-Feni chain. It is probable that alkaline volcanism also occurs on Bougainville. High — alkali volcanics occur on Misima Island (Williamson and Rogerson 1983); and at Milne Bay, late Oligocene - Miocene syenitic stocks and dykes intrude Palaeogene Kutu volcanics, gabbro and ultramafics of the Papuan Ultramafic Belt (Smith and Davies, 1973).

**Marine acid volcanics** are rare in the younger volcanics of PNG, which tend to be andesitic. However, the Triassic Kana volcanics, cropping out north and east of Mt Hagen, consist of a bimodal acid and basic lava suite, volcaniclastics and fine-coarse tuffaceous sediments (Pigram et al., 1987). They are apparently submarine but little detailed field work has been carried out on the formation.

**Sedimentary environments conducive** to mineralisation occupy large areas on the mainland. Mesozoic sedimentation in PNG was dominated by vast shale formations (Wahgi Group — Om Beds, Maril Shale, Chim Formation); deposited in partly euxinic outer shelf and slope environments (Davies 1982; 1983). Carbonaceous and calcareous shales are common and bedded pyrite horizons are scattered throughout the succession. Metamorphosed equivalents of these sediments were mentioned earlier. Fine, in part calcareous, mudstones (Omaura Formation, Aure Beds) occur over large areas in the Aure “Trough” (Rogerson et al, 1982). Miocene times were dominated by deposition of extensive shallow to deep water carbonate deposits (Darai and Puri Limestones) which crop out in a 100 km wide belt from the Papuan Gulf northwestwards through the Ok Tedi area into Irian Jaya, where they are known as the New Guinea Limestone. They are in part dolomitic. Maximum thickness of the Darai Limestone is l300m (Davies, 1982). The Lelet Limestone (Stewart and Sandy, 1986), is a thick Miocene carbonate sequence on New Ireland, and similar limestones occur on New Britain and Bougainville Islands.

In contrast to the igneous environments, PNG sedimentary units have been little explored for deposits intrinsically related to them such as exhalative Pb-Zn-Ag deposits, Mississippi Valley—type Pb-Zn-Ag deposits and sediment—hosted replacement gold deposits.

**Surficial deposits** began forming in PNG as Pliocene and Quaternary uplift exposed older sequences to subaerial erosion. Resulting surficial deposits vary in character in response to many factors. The most important mineral deposits associated with surficial rocks include placer precious metal deposits, shoreline sands and lateritic deposits. While the first two deposit types were formed in a high energy environment, perhaps separated from their metal source, the latter requires a relatively level, poorly drained, low energy environment in close proximity to a metal reservoir for full development.

The reader is referred to SEG Special Publication 6 entitled "Southwest Pacific Rim Gold Copper Systems; Structure, Alteration, and Mineralisation" by Corbett and Leach (1998) for an overview of a range of mineralisation types in PNG. ■

*Ok Tedi mine and mill*

# 5. MINERAL PERMITS

The principal legislation in PNG which regulate mining activities are the *Mining Act 1992* and the *Mining Safety Act (Ch. 195A).* This legislation is administered by the Department of Mining.

Under the Mining Act the State owns "all minerals existing on, in, or below the surface of any land in Papua New Guinea, including minerals contained in any water lying on any land in Papua New Guinea." A person must not carry on exploration or mining on any land unless he is duly authorised under the Act. Consequently, the Act sets out the procedure whereby the State's Minister for Mining can issue various types of Leases or Licences (mining tenements) to interested companies on application, to enable them to engage in various exploration and/or mining activities in Papua New Guinea.

PNG citizens are allowed to carry out non-mechanised mining of alluvial minerals on land owned by them (using hand tools and equipment but not pumps nor machinery driven by electric, diesel, petrol or gas-powered motors), provided that the mining is carried out safely and in accordance with the mining safety Act , and that the land is not the subject of another tenement (other than an Exploration Licence).

**LICENCE TYPES**

There are various types of mining tenements (licences / leases) which are issued under the Mining Act on recommendation from the Mining Advisory Board. These tenement types are listed below;

*Porgera mine and mill*

(a) Exploration Licence (EL) - granted for a term not exceeding two years and may be extended for periods up to two years.

(b) Mining Lease (ML) - granted for a term not exceeding 20 years, which may be extended for such period not exceeding ten years.

(c) Special Mining Lease (SML) - may be granted for a term not exceeding 40 years and may be extended for such period not exceeding 20 years.

(d) Alluvial Mining Lease – generally used by PNG citizens for small scale mining activities.

(e) Lease for Mining Purpose ; and

(f) Mining Easement.

**Exploration Licence (EL)**

The area of land in respect of which an EL may be granted must not be more than 750 sub-blocks (one sub-block = approx. 3.41km2). When applying for an extension of the term of the EL, not less than half of the area held at the commencement of

that term must be relinquished. Where the area of an EL has been reduced to not more than 30 sub-blocks, the EL holder will not be required to make any further relinquishment on renewal. Where as a result of relinquishments, the area has been reduced to not more than 75 sub-blocks, the EL holder may apply to the Director to waive or vary the requirement to relinquish but the total area permitted to be held after such waive shall not exceed 75 sub-blocks.

**Rights conferred by an EL**

An Exploration Licence (EL) authorises the holder to do the following;

(a) enter and occupy the land which comprises the EL for purposes of carrying out exploration for minerals on that land;

(b) to extract, remove and dispose of such quantity of rock, earth, soil or minerals as may be permitted by the approved work program;

(c) take and divert water situated on or flowing through such land and use it for any purpose necessary for his exploration activities subject to and in compliance with the Water Resources Act which is administered by the Department of Environment and Conservation; and

(d) do all other things necessary or expedient for the undertaking of exploration on that land.

Applications for the grant or extension of an Exploration Licence must comply with the two main requirements, namely the technical and financial capacity to undertake an approved work program.

Minimum annual expenditure in connection with an approved program is prescribed in the Act. An approved program may be varied at any time on written application to the Director based on one or more of the grounds specified in the Act.

An EL Holder is also required to lodge the following reports in duplicate with the Director;

(a) a Bi-Annual Exploration Report and Bi-Annual Expenditure Statement calculated from the date of grant, on expiry, on cancellation and also on making an application to surrender the EL.

(b) an Annual Report calculated from the date of grant of the EL and

(c) a relinquishment report in respect of the period up to the date of relinquishment or surrender of the whole or any portion of an EL or on expiry or cancellation of the EL.

**SPECIAL MINING LEASE**

An SML is generally issued to the EL Holder for large-scale mining operations. The EL holder must also be a party to a Mining Development Contract with the State. Before the grant of an SML, the Minister is required to convene a development forum to consider the views of those persons and authorities that the Minister believes will be affected by the grant of the SML. Those represented at such a forum include the applicant for the SML, the landholders effected by the SML application, appropriate National Government Departments, and the Provincial Government in whose province the SML application is situated.

**Mining Development Contracts (MDC)**

Under the Act, the State has the discretion to enter into an Agreement consistent with the Act, relating to a mining development or the financing of a mining development held under a mining tenement. Some of the factors that the Minister may consider in determining whether the mining of a mineral deposit should take place under a Mining Development Contract between the State and a tenement holder include the size or distribution of a mineral deposit, the method of mining or treating it, the infrastructure required for it and its financial or economic attributes.

**MINING LEASE (ML)**

A mining lease shall not be more than 60 sq.km in area. The main difference between an ML and an SML is the scale of the operation. In any event, the EL holder has the exclusive right to apply for an ML (or SML) over ground covered by the EL. ■

# 6. STRATEGIES FOR IMPROVING THE INVESTMENT CLIMATE IN PNG

Some of the disincentives to investment in PNG will take many years to overcome, eg, law and order, structural reforms leading to better governance, while others can be effected relatively quickly. Long and short term strategies to enhance investment that are currently being undertaken by the Department include;

| PROBLEM | STRATEGY | STATUS |
|---|---|---|
| Uncompetitive elements of the fiscal regime | Review and propose a more attractive fiscal regime | Near complete |
| Department unable to monitor and regulate | Review and propose a more responsive, competent agency | Near complete |
| ditto | Building staff capacity through training | Five year duration World Bank project under way |
| Outdated Mining Act and Mining Safety Act | Amend the Acts | Under way |
| Outdated information format and processes | Computerisation and conversion of data to electronic format | Under way |
| Low exposure of data to customers | Development of web-based access to information and sales | Soon to commence |
| Limited infrastructure and sustainable development from operations=landowner discontent | Policy on governance of benefit streams from mining. | Final phases of policy development Planning under way for implementation. |
| No new geodata | Large scale geophysics, geochem and geological surveys funded by an EU grant of Eu50million | Commences 2003/4 |

# 7. 2002 FISCAL REVIEW

Senior personnel from the Department acting under instructions from the Minister for Mining, together with officials from the Department of Petroleum, Treasury and the Internal Revenue Commission undertook a review of the fiscal regime in PNG with the view to proposing a more attractive regime for the sector.

**Summary of Mining Fiscal Terms for new Mining Projects with effect from January 2003**

| | |
|---|---|
| Income Tax rate | 30% |
| Dividend Withholding Tax Rate | 10% |
| Accelerated Depreciation Allowance | 25% DB Pool |
| Royalty Rate | 2% |
| Deductions of Exploration Expenditures | 200% |
| Additional Profits Tax | Abolished |
| Ring Fencing | Relaxed |
| Mining Levy | None |
| Capital Gains Tax | None |
| State Equity | Under Review |
| Fiscal Stability | Optional at 2% premium |

The result of the review has elevated the IRR for both "model" copper and gold mines within PNG, as shown on the table and graph below.

**Comparative Fiscal Regimes for a Model Copper Mine in Selected Jurisdictions**

**(Indexed on Foreign Investor IRR, Otto 2002)**

| Country | Foreign Investors Internal Rate of Return (%) | Total Effective Tax Rate (%) |
|---|---|---|
| Lowest taxing quartile | | |
| Sweden | 15.7 | 28.6 |
| Chile | 15.0 | 36.6 |
| Argentina | 13.9 | 40.0 |
| PNG 2003 | 13.8 | 42.7 |
| Zimbabwe | 13.5 | 39.8 |
| Philippines | 13.5 | 45.3 |
| 2nd lowest taxing quartile | | |
| South Africa | 13.5 | 45.0 |
| Greenland | 13.0 | 50.2 |
| Kazakhstan | 12.9 | 46.1 |
| W. Australia | 12.7 | 36.4 |
| China | 12.7 | 41.7 |
| USA (Arizona) | 12.6 | 49.9 |
| 2nd highest taxing quartile | | |
| Indonesia (7th, COW) | 12.5 | 46.1 |
| Tanzania | 12.4 | 47.8 |
| Ghana | 11.9 | 54.4 |
| Peru | 11.7 | 46.5 |
| Bolivia | 11.4 | 43.1 |
| Mexico | 11.3 | 49.9 |
| Highest taxing quartile | | |
| Indonesia (non-COW 2002) | 11.2 | 52.2 |
| Poland | 11.0 | 49.6 |
| PNG 1999 | 10.8 | 57.8 |
| Ontario Canada | 10.1 | 63.8 |
| Uzbekistan | 9.3 | 62.9 |
| Ivory Coast | 8.9 | 62.4 |
| Burkina Faso | 3.3 | 83.9 |

## DETAILS OF THE NEW FISCAL INCENTIVES

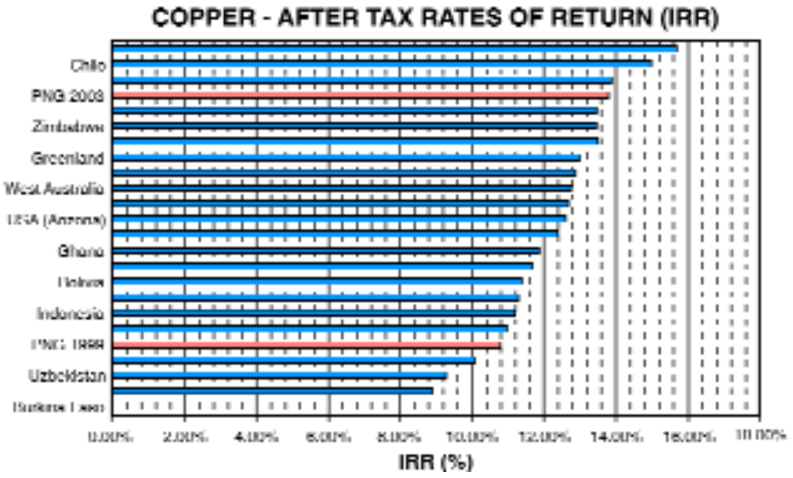
### Abolition of Additional Profits Tax (APT) in the Mining Sector

APT was introduced into the tax system in order for the Government to capitalise on developments which have very high levels of profitability. To date no mineral development has paid APT under the current structure of the tax. (Bougainville Copper paid APT on three occasions under its own unique regime).

APT has for some time been considered by industry as one of the most significant disincentives to exploration in Papua New Guinea.

The apparent ineffectiveness of APT to date and its negative impact on exploration and new investment did not appear to support its continued application in the mining sector.

The Government has abolished the Additional Profits Tax from the Mining sector.




**Ring Fencing**

Associated with APT is the ring fencing provision which prevents exploration expenditures from outside the lease area from being deducted from an existing mine's profits for tax purposes. This provision was relaxed to some extent after the Bogan Review allowing companies to pool exploration expenditure with a deduction for tax purposes up to 20 per cent of a pool of exploration expenses provided that this does not reduce tax payable by more than 10 per cent.

The ring fence discourages companies from investing profits into new exploration activities elsewhere in the country by limiting potential tax deductions. Accordingly, the ring fence has been further relaxed to allow up to 25% of a pool of off-lease exploration expenditure to be allowed as a deduction for tax purposes provided that this does not reduce tax payable by more than 25 per cent.

**Double Deduction of Pre-production Exploration Costs**

Most mining tax systems allow pre-production exploration costs to be expensed or deducted in a relatively short time period. PNG's ring fencing provision has in the past limited the write-down of exploration expenses. In order for PNG to better promote itself as a nation that welcomes and supports mining exploration, a double deduction for the incurred expenditure has been offered.

The current system has been modified to allow a 200% deduction allowance for exploration expenditures incurred after 1st January 2003.

The first 100% deduction is allowed as a deduction against assessable income in accordance with the current deduction rules. The second deduction would only arise once a mine commences commercial operations.

This incentive will be viewed as very attractive by the exploration industry.

**Income Tax and Dividend Withholding Tax**

PNG's current mining income tax rate of 30 per cent and dividend withholding tax (DWT) of 10% are similar to rates in other nations and are internationally competitive.

These rates have been retained.

**Depreciation**

The concept of depreciation is that a taxpayer should be able, over the life of a piece of physical plant (equipment or building), to deduct the full cost of that plant. PNG previously provided for a 10 yr straight-line depreciation for all long-life assets and 25 per cent declining balance depreciation for all other assets. Many countries offer swifter depreciation allowances with the result of significantly increasing the rate of return to the investor of any project.

In order to improve investor returns PNG has moved to using 25 per cent declining balance depreciation pool arrangement for all assets for any new mineral development.

The proposed regime has the additional benefit of removing the requirement for mining companies and the IRC to retain complex asset registers in order to determine the amount eligible for deduction in any one year.

**Loss Carry Forward Time Limit**

Prior to the Bogan review the loss carry forward time limit in PNG was seven years. This was increased to 20 years in 2000. Investors view this period as attractive, but it presents mining companies and the IRC with the administrative requirement to maintain records of losses for the full twenty year period. As a result of this issue many nations have now moved to eliminate any maximum time period for the carry forward of losses.

PNG has now removed any time limit on the carry forward of losses.

# 7. 2002 FISCAL REVIEW continued

**State Equity Participation**

The current PNG mining regulatory system provides the government with an option to take a paid equity stake of up to 30% in a project at the time a Mining Lease is issued. The requirement for State equity is considered by the mining industry as a severe disincentive to investment in Papua New Guinea.

The reasons for this view are:

- The State takes equity at sunk cost of exploration and not at market value. This is considered as an indirect tax as the developer could otherwise sell the 30% stake at market price.
- The track record of the State in recent times in deciding on whether or not to take the equity and at what price has caused substantial delays to project approval process, increasing the development costs and increasing the uncertainty to potential financiers.
- The risk of the State attempting to increase its equity share at some later time, as occurred in the case of Porgera, has added to the perception of sovereign risk for developers.
- The requirement results in the dilution of developer interests and may cause the major participant to be reduced to a minority holding. Most major mining companies will not develop a mine without a clear controlling in order to secure autonomy of management.

The Government has agreed to review its equity option and has agreed to appoint a team to report back to the Government by July 2003.

**Premium for Entities Wishing To Make Use Of The Fiscal Stabilisation Act**

PNG currently offers fiscal stability under the Fiscal Stabilsation Act without requiring payment of a premium for this benefit.

PNG introduced a 2% company tax premium for the offer of fiscal stability for the duration of the financing period. This premium is also under review. ■

# 8. EXPLORATION HIGHLIGHTS, 2002

The total number of current exploration licences in PNG appears to have levelled out at around 80. There were six new applications for year 2002 to the end of December, compared with five for 2001. Four new applications have been received to the end of February 2003.

Based on the data submitted to the Department approximately US$ 10.1 million was spent on exploration for 2001 in comparison with US$ 6.7 million for 2002. This figure does not include exploration expenditure on Special Mining Leases or Mining Leases.

At **Kainantu**, additional engineering and processing information is still being gathered by Highlands Pacific which will assist in bringing the project into a mining operation in 2004. The most recent inferred resource estimates based on results to the end of June 2002 are 1.01 million tonnes at 38.3 g/t gold which indicates approximately 1 million ounces of recoverable gold.

A feasibility study was completed by Abelle Ltd at **Hidden Valley** on 4 October 2002. This study assumes development of the Hidden Valley deposit, comprising the Hidden Valley Zone (HVZ) and Kaveroi Creek Zone (KCZ) within the same open pit, to produce an average of 310,000 ounces of gold and 5.2 million ounces of silver (387,000 gold equivalent ounces) per annum over a nine year mine life. Further studies are scheduled.

**Frieda** - diamond drilling of Cu-Au porphyry targets by a Noranda /Highlands Pacific JV will recommence early 2003.

**Wafi Cu-Au** – A 4000m drilling program by Abelle Ltd is scheduled to be under way March.

**Feni Is Au** – Paccom Ventures Inc has signed a letter of intent to option 75% interest in the gold project. The agreement includes a commitment to commence drilling by 30th June 2003.

**Gameta Au** - Drilling is underway by Gold Aura Ltd to test the down dip extensions of previously drilled gold mineralisation.

**Tolukuma Au mine** – Extensive regional exploration including airborne geophysics by DRD on surrounding tenements.

**Simberi Au** - Nord Pacific announced late in 2002 that it had entered into an option Agreement with PGM Ventures Corporation, a Toronto based explorer. The JV will be updating a previously completed feasibility study.

**North Porgera** – Celtic Minerals has entered into a JV over highly prospective ground covered by EL 1235. Work in 2003 will include an airborne geophysical survey. ■

# 9. MINING ACTIVITIES

The mines produced 211,315 tonnes of copper, 63,156 tonnes of gold and 64,007 tonnes of silver during 2002.

**Mineral Production 2001 and 2002.**

| MINE | Au (kg) | Au (kg) | Ag (kg) | Ag (kg) | Cu (t) | Cu (t) |
|---|---|---|---|---|---|---|
| | 2001 | 2002 | 2001 | 2002 | 2001 | 2002 |
| Ok Tedi | 14,144 | 16,176 | 35,770 | 32,328 | 203,762 | 211,315 |
| Porgera | 23,658 | 19,962 | 3,516 | 3,944 | - | - |
| Misima | 5,182 | 4,496 | 20,318 | 22,347 | - | - |
| Lihir | 20,153 | 18,761 | - | - | - | - |
| Tolukuma | 2,256 | 1,983 | 9,297 | 4,730 | - | - |
| Small Scale | 1,689 | 1,779 | 674 | 658 | - | - |
| Total | 67,083 | 63,156 | 69,575 | 64,007 | 203,762 | 211,315 |

The only aspect of operations at **Ok Tedi** that were negatively affected by the dry El Nino conditions were export of the concentrate. Total ore reserves at Ok Tedi stand at 288 million tonnes grading 0.85% copper and 0.91 g/t gold. This equates to 2.03 million tonnes of recoverable copper and 5.753 million ounces of recoverable gold.

At **Porgera** constant vandalism of the power pylons along the Porgera – Hides powerline caused prolonged power outages resulting in mill closure and lost production during Q3 / 2002. The mine lost approximately 1,500 kg gold production for the 2002 calendar year as a consequence of the disruptions. Reserves at a gold price of US$300 stand at 58.1 million tonnes grading 3.337 g/t gold, which equates to 6.241 million contained ounces of gold.

**Misima** continued to treat stockpiled low grade ore throughout the year. Most non-mining activities on Misima currently relate to mine closure. Misima currently has approximately 210,000 recoverable ounces of gold in its reserve base, and will close in 2004.

At **Lihir**, the Measured, Indicated and Inferred Mineral Resources, inclusive of the Ore Reserves, are 404.1 million tonnes averaging 3.16 grams of gold per tonne for 41.1 million ounces of contained gold. Included within this are Proved and Probable Ore Reserves of 143.0 million tonnes averaging 3.63 grams of gold per tonne for 16.7 million ounces of contained gold.

Production from the underground mine at **Tolukuma** continued throughout the year. The mine has approximately 0.9 million contained ounces in reserves. Considerable effort is being put into sourcing further ore for the mill. ■

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