Mining & Exploration Bulletin 2015



A Publication of the Mineral Resources Authority

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2015

The Mining and Exploration Bulletin is an official publication the Mineral Resources Authority (MRA) of Papua New Guinea.

The Bulletin is a bi-annual publication that is intended to give information the performance and development of mineral exploration and mining projects in the country.

It also contains updates on government policies and activities relating to the sector.

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Executive Summary

The mining industry is cyclical. In 2013/2014/2015 we entered a difficult period following the decline of mineral commodity prices, almost across the board.

This downturn has led to financial constraints across the sector, reducing production and operating pressures at both existing mines and within the exploration space. Ok Tedi has since laid off workers from the mine.

The gold price, still the mainstay of PNG mining, has fallen up to 28% since the most recent peak in this commodity cycle.

The downturn has combined with a fall off in production from Ok Tedi, lower than forecast production at the Lihir, Simberi and Hidden Valley mines and a slower move to full production at the Ramu Nickel and Cobalt mine.

Production from PNG's existing mines has, according to bank of PNG records, been in decline since 2007 for copper and 2010 for gold. PNG's potentially significant new mineral prospects have yet to move into a development phase. This remains a concern of the government.

All the key minerals mined in PNG– copper, gold, silver, nickel and cobalt, have therefore been impacted by this current down-turn with prices falling in value to varying degrees.

This uncertain environment leads directly to lower export receipts, less tax take, reduced royalties and levy, and reduction in direct expenditure within the PNG economy. Government recognises the difficult times that now confront us.

The Mineral Resources Authority (MRA) continues to operate diligently to ensure that the industry is sustainable for the people of mineral export receipts by 2030 but will in fact surpass it.

The alluvial mining sector within PNG is a potential growth area. It is relatively low profiled industry. Our records show that in 2013 the industry exported more than 97,000 ounces of gold netting about PGK300 million.

The expectation is that alluvial mining exports may be doubled within the next 5 years.

This would represent a PNG national sector of the mining industry generating revenue of almost PGK 1 billion per annum. The benefits which would flow directly to local rural communities across PNG from this initiative are huge.

Our existing regulatory structure ensures much of this revenue flows directly to landowners and citizens.

The key message therefore, is that the alluvial resource in PNG is extensive, under-explored, under developed and nationwide.

There is considerable investment upside for genuine and experienced operators who are prepared to work alongside our people to unlock this potential. The MRA spent over PGK 15 million for in 2015 for its own exploration programmes to obtain data that companies can utilize in their exploration efforts.

Despite the bleakness, this issue carries stories of new projects, indicative of the resilience in the mineral sector in PNG.

PHILIP SAMAR

Managing Director Mineral Resources Authority

PNG. PNG has always ranked highly on its international reputation for prospectivity.

PNG's leading reputation for its traditional porphyry based gold and copper geology is now further embellished by the potential to diversify into other minerals such as coal, mineral sands, molybdenum and geothermal.

Mining may have currently hit the 'pause' button, but is merely in readiness for the next move to significant further development.

Several world class prospects already await that next phase. Therefore, despite these cyclical issues and delayed start-ups, the PNG government envisages a bright future for mining with significant growth upside.

The PNG government considers mining diversity, a 'no surprises' regulatory regime and targeted application of geoscientific studies the key to provide a monumental boost and broader based mineral footprint.

The government is investing in infrastructure and community development. It is reforming development.

With this will come a steady wealth expansion in PNG over the next 15 years. I am therefore confident that we will not only achieve our target of doubling

Government

Mineral Sector Profile Update 2015

The Bank of PNG stated in its March Monetary Policy Statement that the 2015 GDP will be 9% supported by increasing production of LNG, nickel and cobalt. Despite the recession, the minerals sector will continue to drive the GDP and economy Papua New Guinea.

The larger mines in Ok Tedi, Porgera and Lihir are operating at stable paces with expected production at this time of recession. Mines such as Hidden Valley and Ramu NiCo have increased their productions; with Ramu NiCo reaching almost 80% production capacity in the first quarter of 2015.

Papua New Guinea has diversified its mineral export portfolio with Ramu mine exporting nickel and cobalt and further more in chromite. The other significant mines in Ok Tedi, Lihir and Simberi registered decreased gold exports; however PNG exported 58 tons of gold, 5.5 per cent increase to 2013 gold exports, with increased gold production from Porgera, Tolukuma and Hidden Valley mines offsetting the decrease.

The total number of exploration licenses managed has decreased in 2015, compared to 2014. More land areas are becoming vacant. Lesser new applications and renewals are registered by the Registrar's office. The State permitted two mining licenses and some significant progress had occurred since the last reporting (in 2014).

In July 2014, Woodlark Mining Limited, a subsidiary of Kula Gold Ltd was granted a 9 years mining lease (ML) over their project on Woodlark Island in the Milne Bay Province. The company is in the financing stages to-wards construction.

- Crater Mining Ltd was also granted a 10 years ML in November 2014 to mine the high grade zones veins in their project in Lufa, Eastern Highlands Province.
- Frieda river project is progressing well with its feasibility studies to begin construction in 2017; owned by PanAust Ltd, till recently in the second quarter of 2015, when GRAM Ltd (Guandong Rising Assets Management) took over PanAust. The feasibility studies will be delivered to the PNG Government in the first quarter of 2016.
- Wafi Golpu in Morobe Province will also ready to deliver its feasibility studies, in last quarter of 2015 or first quarter 2016.
- The Solwara 1 project which is under a ML granted in 2011 has progressed significantly in building the undersea mining tools in UK. A customised ship is also being built to support the undersea mining from the surface.



Figure 1: Comparison in nickel & cobalt production in 2013 & 2014

In March 2014, the total number of tenements registered as active, renewals and new applications were 365. By May 2015, the total stood at 274 tenements.

The recession in the industry had filtered the investors and created opportunities for new players in the industry of Papua New Guinea

Explorations in the other fronts are slow, but some projects are steadily taking their work plans to feasibility studies; and notable ones are;

- ◊ Orokolo iron sands project near Kerema, in the Gulf Province, owned by Mayurs Resources Ltd.
- ◊ Morobe Coast chromite project in Salamaua, Morobe Province, owned by Katana Irons Ltd
- Mt Kare between Enga and Hela Provinces, owned by
 Indochine Ltd

The Geological Survey of Mineral Resources Authority

| No. | Mines | Gold (ozs) | Silver (ozs) | Copper |
|---------------------------|--------------------------|-------------------------|--------------|---------|
| 1 | Porgera | 411,767 | 79, 517 | |
| 2 | Ok Tedi | 264, 812 | 654, 742 | 75, 907 |
| 3 | Tolukuma | 7, 215 | 13, 850 | |
| 4 | Sinivit | - | - | - |
| 5 | Simberi | 53, 084 | 10, 585 | |
| 6 | Lihir | 755,847 | - | |
| 7 | Hidden | 206,705 | 1, 951, 675 | |
| 8 | Ramu | 17, 685 | 1798 t(Co) | (Cr) |
| Total produc- tion: | 1,739,085. 61 (Au Oz) | 2,658,939.23 (Ag oz) | | |

Table 1: Mine Production: January-December 2014



Note: Figure does not include overdue New and Renewal Applications (Applications lodged before 2011), Applications put on Hold and Conversions.

Figure 2: Exploration Licenses June 2014-May 2015.



Figure 3: EL Map June 2015

(MRA) is undertaking some geological, geochemical, geophysics and geothermal studies in various parts of the country. It recently in July released two 1:100K Wau and Biaru map sheets.

It will carry out field studies in the Goilala region to produce two 1:100K maps sheets for Wasa and Yule.. A 30, 745.8 km runs at 500 meters spacing airborne geophysics survey was completed in June, 2015. The outcomes from this survey are magnetic and radiometric data. Geothermal scientists are currently studying geothermal sites for economic development, including as an alternate source of energy. Geochemical sampling was done in Kainantu area in 2014, and a regional country survey is planned for 2015-16. All these data will be available to anyone interested at a minimal fee.









Note: These figures, exclude 53 Nautilus Applications/Renewals which are "On Hold" by agreement and 187 Conversions which are under current review and verifications.

Government

January - June 2015

GoPNG adopts a Computerised Mineral Tenement Management System



BACKGROUND

On the 27th of June 2013, the Mineral Resources Authority (MRA) and Spatial Dimension Pty Ltd. signed a contract for the development and implementation of an integrated Mineral Tenements Management System (MTMS). The project was carried out over a period of twelve months which included a two month inception period, six months of system configuration and four months of go-live preparation.

The project was funded under the World Bank's Mining Sector Institutional Strengthening Technical Assistance Project 2.

The project encompassed five main components: (i) Strengthening the Policy and Regulatory Frameworks for the Mining Sector (ii) Strengthening mining sector governance, regulation, and sustainable development outcomes; (iii) Improving revenue collection and audits of the sector; (iv) Strengthening the foundations for a conflict-free mining sector in Bougainville; and (v) Project Management.

PNG was admitted as an Extractive Industries Transparency Initiative (EITI) candidate country in March this year. The EITI standard not only calls for revenue disclosure but also the public disclosure of "tenement and agreement" information. The tenement mapping portal of the new tenement system complements the EITI standard by allowing the public online access to certain tenement related information.

The primary intention of the project, to design and implement a system for mineral tenements administration and management consistent with the needs of MRA. This would enable the PNG government to;

- Maintain the integrity of mineral tenement information
- Provide access to tenement information for the benefit of investors
- Contain a bibliographic database of annual exploration reports

With the Mining Act 1992 as a guiding tool, the con-

tractor Spatial Dimension undertook the development of the system together with local expertise from MRA. The Flexi cadastre system was designed to be flexible enough to be easily amended to take into account of revisions of the Act and Regulations currently underway in the country.

The completion of this project the National Government has given existing and prospective exploration and mining companies, the opportunity for top level security on their license tenure - and the public - a high standard of transparency in the process of granting exploration and mining li-

cences.

In May 2015, the Mineral Resources Authority (MRA) launched the new mining tenements management system at the Mining Haus.

The new system uses the Spatial Dimension's licenced software called 'Flexi cadastre' which allows for the administration of mineral tenements in accordance with the processes set out in the Mining Act 1992.

The system records and monitors the obligations outlined in the tenement holders' work programme, and eliminates the possibility of overlapping tenements. The software will, subject to amendments to be introduced in the revised Mining Act 2014, enable the processes of tenure management to be delivered over the internet, from application for grant to final surrender of tenements, including statutory reporting, provision of exploration and production data and compliance support.

The old system was based on hard copy tenement applications and reporting, processed on forms developed as part of the Mining Act 1992.

This manual system was slow and out-dated with respect to current work practices in the global mining industry. Industry and regulators now expect real time access to mining tenure processes, including digital reporting of exploration and mining activities for compliance and enforcement purposes.

Flexi Cadastre brings significant improvements to most of the administrative processes required under the Mining Act and its updates. It enables better,



An example of the Application process under Flexicadastre . Courtesy of Spatial Dimen-

reliable and timely presentation of mining related data. This functionality should ensure a more convenient process for the granting and renewal of tenure in PNG and elevate MRA into the top tier of destinations for mineral explorers.

On hand to launch the system at that time was Mining Minister Hon Byron Chan who said at the launching that security of tenure of license is an important aspect of investing in any country, and at the same time transparency in our processes was paramount.

He said by embarking onto this new system the government is signalling to investors and people of Papua New Guinea that the government is serious about making sure investors are comfortable and secure, considering that they spend millions of Kina on exploration expenditure, and also that all stakeholders including landowners will be better informed through the Extractive Industries Transparency Initiative (EITI).

PNG was admitted as an EITI candidate country in March this year. The EITI standard not only calls for revenue disclosure but also the public disclosure of "tenement and agreement" information.

The tenement mapping portal of the new tenement system complements the EITI standard by allowing the public online access to certain tenement related information.

Government

Defining structural lineation associated with geothermal manifestations using remotely-sensed and seismicity datasets

Geophysicists from the Mineral Resources Authority conducted a geothermal sampling program in West New Britain, whereby at least 30 geothermal features were sampled for their water, gas and rock samples. Analytical results obtained from these samples identified several neutral-chloride mature geoare divided into two main areas, Hoskins to the east and Talasea to the west.

Interest in the geothermal activity of the West New Britain area probably started when Fisher (1939, 1940, 1942, 1957) investigated the volcanoes in the area and examined the sulfur deposits from Mt



Figure 1: Geothermal hotspots on tectonic setting (Hotspot location updated from Mosusu (2008) and tectonic framework from Williamson and Hancock (2005))

thermal fields that have the potential to be developed for geothermal energy. However, given the areal extent of some of the geothermal fields and difficulty in accessing them, it appears that a large number of features remain unidentified, may never be sampled, and their geothermal characteristics may never be known. This has the potential to underestimate the real potential of the geothermal system.

Using remote sensing techniques the team was able to identify geothermal features. And with the availability of near-shallow seismicity data, they were able to link these geothermal manifestations to existing faults and other geological structures.

1. Introduction

The geothermal fields of West New Britain lie on the northern coast of the New Britain Island and span over 200 km between Talasea station in the west and Bialla station in the east (Figure 1). The fields nined the sulfur deposits from Mt Gabuna and Mt Pago. The thermal fields were later investigated in more details by Reynolds (1954) and Heming and Smith (1969) when they carried out geological mapping and geochemical sampling of the Talasea and Kasiloli

geothermal fields respectively.

A large number of these investigations concentrated on the geology and hazards associated with volcanoes (Branch, 1967, Bake and Bleeker, 1970, and Lowder and Carmichael, 1970). Other authors used deep geophysical methods, such as crustal seismic refraction datasets (Finlayson et al., 1972 and Wiebenga, 1973), and regional

heat flow studies (Finlayson and Cull, 1973). Few authors have attempted to

investigate the geothermal manifestations and the associated geological structures that play a rol<u>e</u> in ensuring their existence.

In this paper we present results of a geothermal sampling program conducted by the Geological Survey Division in West New Britain Province (Figure 1), and attempt to link the existence of the geothermal features with pre-existing faults and other geological structures. These structures are mapped using radar imagery and also from seismicity datasets.

2. Geological setting & regional seismicity

2.1 Geology and geothermal characteristics

New Britain Island mostly comprises of Tertiary to Quaternary volcanic materials. Several dormant and active volcanoes exist along the northern coastline from west to east (Lowder and Carmichael, 1970). Baining Volcanics (*Teb*) which accumulated in an



Kapuluk Volcanics is of similar lithology to the Baining Volcanics but markedly less indurated, jointed and fractured and widely zeolitized. Slow regional subsidence during a period of volcanic quietness in the early Miocene to early Pliocene, allowed large thicknesses of the Yalam Limestone (*Tmy*) to accumulate in reefs and interreef basins with little or no contaminations from terrestrial sources. It consists of compact or porous, massive to well-bedded bioclastic limestone, chalk, calcareous siltstone and mudstone with minor calcirudite (Ryburn, 1975).

formed the Mungu Volcanics (Tpm)

Figure 2: Geology of the Talasea-Hoskins area, showing locations Renewed volcanism in Pliocene

Eocene island arc is the oldest rock type on the island. It comprises of massive to well-bedded indurated and strongly-jointed volcanic breccia, conglomerate, sandstone and siltstone, basic to intermediate lavas and hypabyssal rocks, tuff and minor limestone.

There is widespread occurrence of andesitic to basaltic intrusives on the island. In the West New Britain area, deposition of Kapuluk Volcanics (Tok) occurred when volcanism resumed in the late Oligocene. The



found southeast of Stettin Bay which comprises dacite, rhyodactie, andesite and pumiceous tuff. They possibly represent the volcanoes that supplied the tuffaceous material in the Kapiura Beds (Tpk) found east of Kasiloli thermal area. The Kapiura Beds consists of semi-consolidated, massive to well-bedded acid tuffaceous sandstone, siltstone and conglomerate, tuff, calcareous sediments and limestone.

All the geothermal manifestations visited including

those not visited such as Gabuna. Galloseulo and Ulawun fields occur in Quaternary Kimbe Volcanics (*Qk*) and alluvium in the lowland areas. The Kimbe Volcanics are basaltic to rhyolitic pyroclastics, principally ash, lapilli, scoria and rubble, andesite, basalt, dacite, rhyolitic extrusives and hypabyssal intrusives. Field observations during this survey noted that the Kimbe Volcanics at geothermal sites are strongly altered to clay due to thermal activity.

Structures are difficult to identify however, observations of the geothermal occurrences (Figure 2) show existence of northerly trend-HCO3 ing faults in the Talasea Peninsula which is a similar trend to faults mapped by Ryburn (1975).

Figure 3: Ternary plot showing relative concentrations of the ani-



Figure 4: Ternary plot showing relative concentrations of Na, K and Mg and the Na-K and K-Mg geothermometers (Giggenbach,

Water samples from 13 hot springs in the survey area were collected including a meteoric water sample from Lake Dakataua located at the northern tip of Talasea Peninsula (also known as Williaumez Peninsula). The hot springs are Rabili (Ra) from Pangalu thermal field, Galu (Ga) and Tabero (Tb) near the Garbuna thermal field, Wavua 1 (Wv), Wudi, Talasea Station (TS), Rongo 1 (Ro), Matagele (M) and Magilae (MG) from the Talasea Peninsula. The hot springs located in Hoskins are Bakama 1 (B), Taliau (TL) and Sakalu (S) in the Silanga thermal field south of Bangula Bay and Magouru (Ma) in Kasiloli thermal field south of Commodore Bay. The hot spring locations and thermal fields are shown in Figure 2.

Using the $Cl-SO_4$ -HCO₃ plot in Figure 3, different

types of thermal waters are distinguished such as steam-heated and volcanic waters based on major anion concentrations (Cl, SO₄ and HCO₃). As shown in Figure 3, the Rabili, Talasea Station, Bakama 1 and Magouru springs are classified as matured waters, Galu and Tabero as volcanic waters, Lake Dakataua and Rongo 1 as peripheral waters and the rest of the springs as steam heated waters.

The Na-K-Mg plot in Figure 4 further classifies the waters into fully equilibrated, partially equilibrated and immature waters based on the temperature dependence of the full equilibrium assemblage of potassium and sodium minerals that are expected to

form after isochemical recrystalliza-

tion of average crustal rock under conditions of geothermal interest (Giggenback, 1988). It can be used to predict the equilibrium temperature and also the suitability of thermal waters for ionic geothermometers.

As shown in Figure 3, Sakalu is the only spring that has fully equilibrated with a calculated reservoir temperature of 295 °C while Magouru, Rabili, Talasea Station and Bakama 1 have partially equilibrated with calculated reservoir temperatures of 300°C, 295°C, 310°C and 245°C respectively.



MINERAL RESOURCES AUTHORITY'S GEOLOGICAL SURVEY DIVISION

The Mineral Resources Authority (MRA) is widely known as a regulatory body of the mineral industry in Papua New Guinea. However, it also houses the country's Geological Survey.

Known as the Geological Survey Division, it is of the four operational divisions of the Papua New Guinea Mineral Resources Authority (MRA).

Geology Survey Division (GSD) of MRA like any other geological surveys of the world is responsible for the administration and management of earth sciences studies and data, including management and administration of mineral resources data.

Geo-Surveys across the world also study and manage geo-hazards and related disciplines; however the MRA's geological survey misses this branch. In PNG it is aligned to the Department of Mineral Policy and Geohazard Management (DMPGM).

Not much is told of the scientific aspects of the MRA, and the office of the Chief Government Geologist of Papua New Guinea. The Chief Government Geologist is also the Executive Manager of Geological Survey Division, the position currently held by Mr Nathan Mosusu.

In 2014, the division conducted active geological mapping and mineral exploration programs in various parts of the country, and these are;

- Kainantu geochemical survey,
- Eastern Highlands Province
- Wau map sheet
- D'Entrecasteaux Metallogenic Map; islands groups in the Milne Bay Province
- Western PNG airborne survey of the Star Mountains area in the Western & West Sepik Provinces
- Geothermal occurrences in Papua New Guinea
- PNG regional geochemistry sampling

Other projects included the World Bank funded data digitization project that produced extra 100 locality points on geochemistry of soils, stream sediments and rock chips.

Due to the downturn in the mineral industry, exploration activities by exploration companies were slow between 2012 and 2014, and the trend may continue in 2015.

To maintain PNG as a prospective destination for a mineral industry investor, the geological survey division of MRA stepped up its activities to continue bring on new geological, geophysical and geochemical data, which are initial pointers to any potential miner and/or explorer, to an area to peg with tenements. In other words, the GSD became a *mineral explorer*.

Western PNG Airborne Geophysical Survey

The Western PNG area between OK Tedi, Frieda and the PNG-Indonesian border is considered a highly prospective region for porphyry copper gold. Based on historical data, the GSD embarked on an ambitious project to conduct a geophysical airborne survey.

The survey area is strategically located between the huge Ok Tedi porphyry copper deposit and the potentially huge Frieda River porphyry Cu-Au project. It covers an area of 14,110 square km to be covered by 30, 745 line km data.

The survey is being flown by GPX Surveys of Western Australia who were awarded the contract to fly the area in 2014. The final datasets will be released towards the end of 2015.

The +PGK 11 million project was funded by the MRA's 2014 operational budget.

The data of this survey will either confirm known prospects or pick up new ones for further ground surveys. Currently the survey is into its final phase of acquiring geophysical data over the Western PNG border with Indonesia.

The geophysical datasets, comprising magnetic and radiometric data, will provide useful information on possible exploration targets that could be prospective mineralized areas. These areas could be further explored as possible mineral deposits.

With the down turn in the mineral industry, the pace of mineral exploration activities in the country slowed, with most exploration companies restructuring and altering work plans.

The Mineral Resources Authority sees this project as an incentive to companies, by acquiring the data and





Figure 1 ; Preliminary data over part of the surveyed area.



Fig 2 The map of the distribution of samples collected in the Kainantu 1:100, 000 map sheet, over-



Fig 3: The distribution of the designed sample distribution for the National Geochemical Sampling Project in 2015.



Figure 4: West New Britain geothermal survey sited overlayed on Google earth map.

having it available to the companies at minimal costs.

Kainantu Geochemical Sampling

Kainantu 1:100,000 Geochemical Mapping Project is a collaborative project between the PNG Mineral Resources Authority, through Geological Survey Division (MRA-GSD) and China Geological Survey (CGS) Division, Nanjing Centre. The project started in January 2014 and ended in September 2014. The cost of the project was shared between the Mineral Resources Authority and the China Geological Survey.

National Geochemical Geosampling Program

The next collaborative project planned for 2015 is the PNG regional geochemical sampling program. This program will use National Scale for sampling designs, i.e. 1:1 million (1 sample per 10 sq. km).

Such scale is a low density sampling technique generating a spatial distribution of elements and their compositions to delineate areas of interests for mineral resources, environments and agricultural purposes.

Currently awareness has been conducted in Provinces, i.e. East New Britain, Manus and Milne Bay that the first phase of the program will be launched.

PNGGEOTHERMAL

Little is known of Papua New Guinea's geothermal sites due to less historical data and reports.

Papua New Guinea due to its unique global location, the pacific rim of fire gives rise to geothermal activities; and energy from these can be harnessed to produce power. Other than for energy reasons, geothermal sites can be suitable for tourism.

Scientists in the Geological Survey Division of MRA are currently running intensive studies in various Provinces, i.e. East & West New Britain, Milne Bay and New Ireland, with significant geothermal resources. Other Provinces such as Madang, Morobe and East Sepik have been visited to study the sites there.

Figure 4, survey sites in West New Britain Province, shows the sites studies have been conducted and data analysed the maturity and energy levels of the geothermal sites. Reports have been written, and these reports can be used as pointers for potential investors interested in developing this industry.

With neither legislative nor policy guidelines, MRA has halted any applications for licences by explorers and developers. Department of Mineral Policy and Geohazard Management (DMPGM) the government institution responsible for policy and legislative matters has advanced the formulation of the geothermal policy, and is expected to be utilized in 2016.



In October 2014, Papua New Guinea's Geological Survey and the Department of Mineral Policy and Geo-hazards hosted the 50th Annual Session conference for Coordinating Committee for Geoscience Programs in East and Southeast Asia (CCOP) and the 63rd CCOP Steering Committee meeting.



Operating Mines

January - June 2015

| OK TEDI COPPER GOLD MINE | | | |
|--------------------------|--|--------------------------|--|
| LOCATION | Mount Fubilan | Western Province | |
| OWNERSHIP | PNG Sustainable Development Pro- gram | PNG Government | |
| | 100% | | |
| Operator | OK Tedi Mining Limited (OTML) | | |
| STATUS | EL 581 (254km ²⁾ | SML 2 (2079 ha) | |
| YEAR GRANTED | 1985 | 28.05.81 | |
| EXPIRY DATE | 03.11.03 | 03.11.09 (under renewal) | |



INTRODUCTION

The Ok Tedi mine located in the Star Mountains of the Western Province, began production of gold more than 20 years ago in May 1984.

The mine then moved to full production in 1987, producing copper concentrate that is piped to Kiunga, transferred to barges that travel that travel to the mouth of the Fly River, and there shipped to ocean-going ships for smelters in Japan, Asia and Europe.

al production is around 600,000 tonnes copper and 550,000 ounces gold. In 2013, the company mined 62.8 million tonnes of ore and waste rock. From this, almost 20 million tonnes of ore was processed resulting in 415,713 tonnes of concentrate being recovered that contained 105,500 tonnes of copper and 364, 782 ounces of gold.

It has an employment population of over 2,000.

OWNERSHIP

The mine is a producer of copper and gold. Its annu-

In 1984 when the company first began operations,

the developer was a multinational consortium consisting three large multinationals, BHP, Amoco Minerals and Metallgesellschaft AG.

From 2011 onwards, OTML became a company owned fully by Papua New Guinea interests under the flag of PNG Sustainable Development Program Limited (PNGSDPL), following the exit of Canada's Inmet as a shareholder from the company.

In 2013, with the departure of the PNGSDPL, the company became a fully owned state owned entity holding 87.8 percent and the people of Western Province holding a beneficial 12.2 per cent ownership.

OPERATIONS

The Ok Tedi mine in Western Province, suspended operations in August after the El Nino induced drought restricted flow of the Fly River, cutting off the barging of copper concentrates to world markets and provision of essential supplies of diesel, food and other products to the mine and nearby communities.

With mine operations suspended and copper-gold prices down, the company decided also to reduce its workforce. It has reduced expatriate positions by 30% and national staff by 15% to ensure that when operations commence, possibly in the New Year, Ok Tedi will remain a profitable supplier of minerals.

Ok Tedi Mining Limited then commenced an orderly suspension of operations as a result of continuing dry weather.

Almost all employees stood down were repatriated to their homes and will continue to receive an allowance to help meet basic needs. Several hundred personnel were retained on site for care and mainte-



nance of facilities and provision of essential services.

The duration of this suspension is uncertain. The Company will continue to actively monitor the situation and determine the appropriate time to resume operations.

THE OTML 2015 QUARTER 1 RESULTS IN SUM-MARY

- Total Recordable Injury Frequency Rate (TRIFR) was 1.82, a disappointing result compared to the corresponding period in 2014 (1.02).
- The Lost Time Injury Frequency Rate (LTIFR) was 0.81 as compared to 0.20 in Q1 2014.
- There were no significant (level 4 or level 5) environmental incidents recorded.
- Copper and Gold production decreased by 18% and 26% respectively compared to Q1 2014. This was predominantly due to lower head grades.
- Gross revenue of PGK 291 million was 58% lower compared to the corresponding period in 2014 due to lower shipments and declining metal prices.
- The Company posted a loss (after tax expense) of PGK 38 million compared to a profit of PGK 280 million in in Q1 2014 mainly due to 58% lower revenue and an 8% increase in operating costs.
- Royalty payments for Q1 2015 were PGK 5.1 million which was lower than the PGK 13.3 million in Q1 2014 driven by lower revenue.

Taxes paid during the quarter were PGK 36.5 million compared to PGK 130.7 million in Q1 2014. The taxes paid in Q1 2014 were considerably higher due to the once-off salary and wages tax paid on employee redundancy payments made in 31 December 2013.

Source OTML 2015

PRODUCTION

In the first quarter of 2015, OTML reported a decrease in Copper and Gold production by 18% and 26% respectively due to lower head grades. Copper and gold production for the first quarter was 18,629 tonnes and 57,453 ounces respectively.

Gross revenue for this period was PGK 291 million and the company posted a loss (after tax) of PGK 38 million.

Royalty payments for Q1 2015 were PGK 5.1 million and taxes paid during the quarter were PGK 36.5.

January - June 2015

| LIHIR GOLD | | | |
|--------------|-----------------------------|-------------------------|-----------------------|
| LOCATION | Lihir Gold Mine | New Ireland Province | |
| OWNERSHIP | Newcrest Mining Limited | Mineral Resources Lihir | Institutions & Public |
| | 16.3 % | 6.8% | 76.9% |
| OPERATOR | Newcrest Mining | | |
| STATUS | EL 458 (254 KM ² | SML 6 (1739 ha) | |
| YEAR GRANTED | 1983 | 17.03.95 | |
| EXPIRY DATE | 31.03.04 | 17.03.35 | |

The Lihir gold mine is one of the world's largest. By capitalization, it is the third largest gold producer.

It presently has an employee population of 2,180, of which 90 percent are PNG nationals. Local Lihirian comprise 33 percent of that figure. Female workers make up 13 percent of the total workforce.

The Lihir deposit was discovered in 1982 by a joint venture, Kenecott Exploration and Niugini Mining. It has an expected mine life of 40 years with exploration for new deposits still ongoing.

Lihir is an epithermal low-sulphidation ore body in an extinct volcanic crater. The Lihir mine has three open pit mines; Minifie, Kapit and Lienetz. Minifie was the first pit to be mined in 1997 when production at the mine started. The company is now mining at Lientez pit and will eventually move to the Kapit pit.

Lihir is estimated to have a total mineral of 150 million ounces of gold. This includes the estimated ore reserves. Lihir has produced over 10 million ounces of gold since production began in 1997.

In the financial year ending 30 June 2015, Lihir produced 688,714 ounces of gold. Since production commenced in 1997, the site has produced more than 9 million ounces of gold.

CURRENT OPERATIONS

On 14 May 2015, was conducted by the government, landowners and Newcrest Mining where all parties agreed to an audit process, led and co-ordinated by the MRA, including a review of commercial engage-



ment processes and benefit allocation associated with landowner commercial activity.

The continued, predictable and lawful operation of the Lihir gold mine and plant contributes to the long term sustainable benefit of all stakeholders including the host community.

Gold production in the quarter was marginally lower than the June quarter as higher feed grade from both ex-pit and stockpile feed was offset by high maintenance activity. Planned shutdowns were completed on Autoclave 4 and Autoclave 1 and on the crushers.

Unplanned maintenance was required on the conveying circuit and milling throughput was lower due to two unplanned outages on two of the three milling circuits because of liner failures.

The Lihir Pit Optimisation Study remains on track for completion by the end of December 2015.

Key impacts on processing during the quarter included planned rolling maintenance to the crushing circuit, decreasing crushing throughput, which was exacerbated by unplanned downtime in the conveying circuit.

Reduced milling availability due to planned maintenance on one of the milling circuits and unplanned shuts on the other two milling circuits due to excessive mill liner wear. As a result the milling circuit throughput was 3% lower at 2,803kt for the quarter (annualised rate of 11.1mtpa).

Newcrest remains confident of achieving 12mtpa milling throughput by the end of December 2015. Papua New Guinea remains under drought conditions and Newcrest continues to focus on efficiently managing water to limit any potential production impacts. Initiatives to reduce raw water usage include harvesting of water from the mine.

GOVERNMENT

Benefits distribution for stakeholders are distributed under three arrangements ie;

- 1. Mining Development Contract
- 2. Memorandum of Understanding
- •Between Government, landowners and community
- Royalty distribution Government commitments e.g. infrastructure
- 3. Integrated Benefits Package (IBP)
- •Between Lihir Gold Limited, landowners and com-





munity -Stakeholder visions and governance -Compensation and relocation -Commercial opportunities -Community development/capacity building -Infrastructure projects -Environmental stewardship and mine closure planning

The first agreement signed in 1995 was designed to be reviewed every 5 years. The latest Lihir Agreements review is presently underway.

Implementation of these agreements are conducted through a committee setup specifically for this purpose, the Lihir Agreements Review Committee. Their objective is to ultimately to reach a long-term agreement in getting the execution of the agreements right rather than getting it done by a certain time.

COMMUNITY AFFAIRS

Between 2013 and 2014, the company spent well over K22 million on projects under the Lihir Tax Credit Scheme through infrastructure development.

This included; •Nasko High School - Kina \$6.9 million

- •Tanir High School Kina \$6.4 million
- •Lihir Secondary School Kina \$5.2 million
- •Namatanai Secondary School Kina \$2.7 million
- •Utu High School Kina \$750,000
- •Mongop High School Kina \$700,000
- •Namatanai Hospital water project Kina \$48,000

Six more projects approved and due for completion by 2016

| | | January - June 2015 |
|--------------|-----------------------------|---|
| PORGERA GOLD | MINE | |
| LOCATION | Porgera Valley | Enga Province |
| OWNERSHIP | Barrick Gold Corporation | Mineral Resources Enga |
| | 95 % | 5% |
| | | (split between the Enga Provincial government and landowners) |
| OPERATOR | Barrick | |
| STATUS | EL 454 (196 km ² | SML 4 (2227 ha) |
| YEAR GRANTED | 1980 | 12.05.1989 |
| EXPIRY DATE | 24.08.2004 | 12.05.2019 |

The Porgera mine is located in the Enga Province at an altitude of 2,000—2,7000 meters above sea level in the Enga Province.

Located in a geographically challenging place, the company has managed to meet its daily operational challenges to be placed in a position where it has been a major contributor to Papua New Guinea's economy apart from the Ok Tedi and Lihir mines.

Both an open-pit and underground mining methods are employed. The mine has en employment population of 2,755. From this figure, about 93 percent are nationals, majority coming from the Porgera area where the mine is situated.

Porgera has a preferential system of employment, giving priority to locals from the mine area.

Since its first gold pour on August 5, 1990, it contributes about 12 percent to the country's gross domestic product (GDP).

OWNERHSIP

Since its first ownership by Placer Dome and Mt Isa Mines, the mine has had a number of owners and Joint Venture arrangements from Placer to Highlands Gold to Aurion gold to Emperor Gold and Barrick.

In August this year, Barrick Gold Corporation announced the formation of a strategic joint venture with Zijin Mining Group Co. Ltd, including the sale of a 50 percent interest in Barrick (Niugini) Limited ("BNL"), for a total cash consideration of \$298 million.

BNL is the 95 percent owner and manager of the Porgera Joint Venture gold mine in Papua New Guin-



ea. The remaining five percent participating interest is held by Mineral Resources Enga Limited and is divided between the Enga Provincial government (2.5 percent) and local landowners (2.5 percent).

As a first step, Zijin will acquire 50 percent of Barrick (Niugini) Limited ("BNL"), the company which owns 95 percent of and manages the Porgera Joint Venture gold mine in Papua New Guinea.

Under the new structure, Barrick and Zijin will jointly control BNL.

About Zijin

Started from Zijinshan Gold Mine in 1993, Zijin Mining Group Co., Ltd ("Zijin") has developed an extensive portfolio of gold, copper, lead and zinc, tungsten, iron and other base metals over the past 20 years, with gold being its main focus.

Zijin has become a large mining group specializing in gold and mineral resource exploration and production with subsidiaries in more than 20 provinces, municipalities, autonomous regions across China and seven countries. Listed on the Shanghai Stock Exchange and the Hong Kong Stock Exchange, Zijin ranked number 117 on the Forbes List of the Top 500 Chinese enterprises in 2014.

PRODUCTION

Barrick's share of gold production from the Porgera mine in 2014 was 493,000 ounces. Production for 2015 is expected to be 500,000-550,000 ounces of gold.

At the end of 2014, Barrick had 3.0 million ounces of proven and probable gold reserves and 4.1 million ounces of measured and indicated gold resources at the Porgera mine (95 percent share).

The company is evaluating a number of initiatives with the potential to further reduce costs at Porgera. These include lowering energy costs through an alternative electricity supply project and reducing the number of expatriate staff and other external spending.

By October this year, Barrick released a statement saying that operations at the Porgera gold mine in Papua New Guinea have been suspended due to drought conditions, the latest mine in the Asia-

Mineral

Resources

Authority



Haul truck transporting ore from the mine pit

Pacific to be disrupted by El Nino-induced dry weather.

Production had been halted due to low levels of water in the mine's reservoir, used in processing the raw ore.

Barrick earlier this year forecast Porgera would yield 400,000-450,000 ounces of gold in 2015, down from its peak years of around 900,000 ounces when it was regarded as one of the world's foremost deposits.

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| | | | January | - June 2015 |
|------------------|-----------------------------|---------------------|---------|-------------|
| HIDDEN VALLEY GO | LD MINE | | | |
| LOCATION | Hidden Valley | Morobe Province | | |
| OWNERSHIP | Harmony Gold | Newcrest Mining Ltd | | |
| | 50% | 50% | | |
| OPERATOR | Morobe Mining Joint Venture | | | |
| STATUS | | | | |
| YEAR GRANTED | | | | |
| EXPIRY DATE | | | | |



Located in the Morobe province in Papua New Guinea, the Hidden Valley mine and is approximately 120km by road, south west of Lae, the provincial capital.

The Morobe Mining Joint Venture (MMJV) project is a jointly funded and operated project by Australia's Newcrest and South Africa's Harmony Gold mining companies.

Since it official commissioning and opening in September 2010, the mine has claimed its position as one of Papua New Guinea's major gold produces like Lihir and Porgera.

The project operates two open pit mines in Morobe Province; Hidden Valley and Hamata. Hidden Valley is located in a place long associated with gold mining in the country since the 1930s.

Both Hidden Valley and Hamata are estimated to contain about 5.6 million ounces of gold, 102 million

ounces of silver and over 9 million tonnes of copper.

MMJV has a workforce of 2000, including contractors, mainly accommodated in a mining camp in Hidden Valley. More than 90% of the workforce is Papua New Guinean, with over 50 per cent drawn from the local community.

Of this, 14 per cent of the employee population is female. The company also places a strong focus on training and development of local employees.

The Hidden Valley mine supports a program to encourage local landowner business opportunities and a range of community development projects in infrastructure, water supply, health and education designed to deliver sustainable benefits to local communities.

OPERATIONS

With an expected lifespan of 14 years, the Hidden

Valley project is expected to produce more than 200 - 250,000 ounces of gold and 2.5 - 3 million ounces of silver.

Ore is transported by truck to the Hamata and Hidden Valley crusher stations. Crushed ore is transported by an overland conventional conveyor over a distance of 4.5 kilometers to the primary stockpile and processing plant. Two jaw crushers are used in series to prepare the ore for transport and feed to the SAG mill. The overland conveyor is a vital link between the mine and processing plant enabling the transportation of ore from Hidden Valley to be fed straight to the SAG mill.

The processing plant utilises conventional gravity and Carbon In Leach circuits for gold and a Merrill Crowe circuit for silver.

Tailings from the processing plant are treated and stored in a purpose built Tailings Storage Facility (TSF). Hidden Valley is the first major mine in Papua New Guinea to build a TSF. All mine tailings, the residues of the gold recovery process, are permanently stored in this facility.

PRODUCTION

After a fatal incident at Hidden Valley on 18 July 2015, operations were suspended and investigation were carried out and completed. All critical controls for high-risk tasks were identified and reviewed. Mining activities then recommenced on 20 August 2015 and processing activities partially recommenced on 23 August 2015, ramping up to full production rates thereafter.

The use of heavy vehicles on the road where the fatality occurred remains subject to some restrictions by the PNG Mineral Resources Authority.

As a result of these events, production decreased significantly in the September quarter, with lower gold grades and recoveries reflecting the processing of a higher percentage of stockpile material once operations recommenced.

Following the fatality, all pre-stripping activities at Hidden Valley stage 5 have been deferred. A decision on future cutbacks is not required until FY17. A review of Hidden Valley stage 5 stripping will occur during the second half of FY16.

Both AUD and USD AISC per ounce increased quarter on quarter due to lower gold and silver production. Site costs for the quarter include redundancy costs for employees whose roles were not required following the decision to defer stage 5 stripping activity.



COMMUNITY AFFAIRS

Royalty payments under the benefits sharing agreement for landowners and the state began in October 2009, where a total of K41.8 million has been paid to date to recipients. The breakup of the monies were;

- K15.08 million to Morobe Provincial Government
- K8.38 million to six Bulolo LLGs
- K16.33 million to Hidden Valley Landowners, and
- K2.09 million to non-landowner communities

Under the company's sustainable development plan initiated in 2010 where projects were aligned with the government's ward, Local Level Government and District planning priorities, K20 million was invested for health, water supply and sanitation, agriculture, aquaculture, community infrastructure, capacity building programs and Lae-Bulolo highway maintenance. Adding to that a further K11 million was set aside as special support grant and channeled through the Morobe Project Management Unit of the provincial government for projects.



The overland conveyer belt for ore tranportation

| | | | January - June 2015 |
|----------------------|----------------------------|----------------------|---------------------|
| SIMBERI GOLD PROJECT | | | |
| LOCATION | Simberi Island | New Ireland Province | |
| OWNERSHIP | St. Barbara | 100% | |
| STATUS | EL 609 (228KM ² | Ml 136 (26KM²) | |
| YEAR GRANTED | 1985 | 03.12.1996 | |
| EXPIRY DATE | 05.06.2005 | 13.12.2008 | |
| PRODUCTION START | 13.02.2008 | | |



Simberi is the northern most island in the Tabar Group of islands in the New Ireland Province, about 900km away from Port Moresby, the nation's capital.

The island, 10km long and 8km wide is home to 1500 people. The Tabar Group of islands is located along the 'Pacific Rim of Fire'.

Seven gold deposits have been defined in mining lease 136 (ML 136), which covers the central and eastern portion of Simberi Island, and other prospects have been identified.

In 2009, Allied Gold the former owner/operator of the mine, reported that the total resources are 4.7 million ounces (Moz) gold, being oxide gold resources of 1.4 Moz and sulphide gold resources of 3.3 Moz together with 10.2 Moz silver.

Ore is delivered to the processing facilities on the eastern coast near Pigiput Bay by a 2,665 m long aerial conveyor that can deliver 600 tonnes of ore per hour. The process plant is a conventional carbon -in-leach (CIL) gold process plant capable of treating 2.2 million tonnes of ore per year.

In 1982 Kennecott, Nord Resources and Niugini Min-

ing formed the Tabar JV to explore for gold on Simberi. In 1993 Nord acquired all the interests and undertook exploration and in 1996 commissioned a feasibility study which led to the grant of a Mining Lease (ML 126) in December 1996. As gold prices fell in 1997 the project was put on hold.

Allied Gold became involved in 2004 and reinstituted a feasibility study and by 2006 mine and mill construction commenced.

In November 2007 mining operations began at the Samat East deposit and the first ore was processed in February 2008.

On September 7, 2012, St Barbara gained control of the Allied Gold Mining PLC group and the Pacific Operations of Simberi in Papua New Guinea, and Gold Ridge in the Solomon Islands.

St Barbara was established in 1969, and is one of Australia's larger and more profitable gold produces, devleopers and explorers listed on the Australian Stock Exchange (ASX).

The project is a conventional open pit operation with a new SAG mill, existing ball mill and standard carbon-in-leach circuit. Following optimization, gold production is expected to be 100,000 ounces per year.

Current mining occurs on the eastern half of the is-

land covered by a 2,560 hectare Mining Lease (ML136). Ore at Simberi is sourced from a number of open pits. The Sorowar Pit is currently the largest defined oxide pit.

Current mining plans of the oxide cap suggest a strip ratio of 1:1. Ore from the pits is delivered to the ROM pad (Sorowar feeder) where it is crushed and conveyed down an innovative and energy-efficient 2.7 km rope conveyor that transports the ore to a stockpile in front of the process plant.

Mine tailings are disposed of in the form of a slurry that has been pre-diluted with seawater using a deep sea tailings pipeline.

The pipeline is 528 m long with the discharge point at a depth of 130 m. The tailings flow down a steep submarine slope and are deposited at a depth of more than 3 kilometers.

PRODUCTION

Simberi (PNG) gold mine in its June report stated that production was a record 29,539 ounces for the quarter, comfortably in excess of the targeted 100,000 oz p.a. run rate. According to the company, mining, ore transport and processing all exceeded their targets and delivered record results.

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| | | January | - <i>June 2015</i> |
|------------------|---|---------|--------------------|
| RAMU NICKEL MINE | | | |
| LOCATION | Krumbukari Madang Province | | |
| OWNERSHIP | China Metallurgical Group Corporation 100 % | | |
| | | | |
| OPERATOR | Ramu NiCo Management Limited | | |
| STATUS | SML 8 (54.4km ²) | | |
| | | | |
| YEAR GRANTED | | | |
| FXPIRV DATE | 26 07 40 | | |



THE year 2015 looks good for Ramu NiCo Project when the Company achieved an impressive 80% capacity rate in January alone. This came at the time when the financer and major stakeholder, MCC-Group set the production capacity benchmark at more than 83% production capacity this year.

The 80% production capacity in January alone was an auspicious start for the New Year and a promising step towards achieving the nameplate capacity of 100% in the near future. This increased the spirit of Ramu NiCo's employees and management and gave confidence to the shareholders and stakeholders. It came at the time when Basamuk Refinery's attempt to achieve 80% capacity in the last five months of

2014 also failed.

Though 2014 was the challenging and crucial year for the Project ramp-up, the Company ensured the slurry supply to Basamuk Refinery was maintained during the rainy season with consorted efforts in the fourth quarter that resulted in the 80% capacity achievement. Part of the contributing factors toward the achievement were the adjustment and relationship between the mining and stripping at KBK Mine and the adoption of an advance management standard which gave KBK Mine a new outlook to eventually overcome technical bottleneck and the unfavorable natural condition including rainy season.

Many adjustments and improvements have been

made at Basamuk Refinery including the third High Pressure Acid Leaching (HPAL 3#) that went into maintenance in January where the processing technicians successfully adjusted the parameters in case of any fluctuation and brought the parameters and index under control.

In August this year, the Environment with Conservation Environment and Protection Authority (CEPA) formerly, the Department of Environment & Conservation (DEC) granted the final approval for the OEMP (Operational Environment Management Plan) of Ramu nickel & cobalt project.

Since 2011 when the interim OEMP was approved by Director of Environment, the nickel/cobalt project based in Madang have been tasked to work against the OEMP for its operation but on a renewal basis. OEMP contains all the requirements to be implemented during the Project construction and production phase to protect the environment.

The granting of the final approval now places Ramu NiCo Project to confidently implement all the environment protection requirements starting from its KBK Mine to Basamuk Refinery including the 135km slurry pipeline.

During the interim OEMP approval in 2011, the Company has undertaken commissioning and ramping up of the Project to its full production in the KBK mine, the pipeline and the Basamuk Refinery operations for over two years.

During the period, the Operations Marine Monitoring Program (OMMP) survey was carried out during 2013 by Ian Hargreaves & Associates of Australia, an Independent consultant.

This survey was done in fulfillment of the permit conditions after almost two years of Refinery and Deep Sea Tailing Placement system operation.

The work was done in various phases including; Coral Reef and Marine fauna investigations done in March and April in 2013 to Remote Operating Vessel (ROV) inspection of sub-sea DSTP infrastructure in October, 2013 and the final Report done in June 2014.

This was the first post operation marine monitoring program conducted by an external independent consultant and showed that, in all key areas of the eight potential impacts, the results demonstrated that the operation of DSTP system had no major impact on the marine environment.



First production and shipment of ore for the Ramu Nico project in 2012

A number of action items and areas for improvement were also identified and implemented under the Environment Improvement Plan (EIP) and have already begun addressing some of the issues.

CEPA will continue to monitor Ramu NiCo's Environmental performance via quarterly reports, site visits, audits and other such avenues as is required to ensure compliance with the environment permit WD-L3 (115) and the OEMP.

Operations

Another milestone for the company was also reached in January this year when a new sulfur melting system was successfully commissioned, depicting one of the significant technical breakthroughs from numerous outstanding technical bottlenecks currently encountered by the Company.

Current Sulfur melting production is insufficient to meet the requirement of the refinery process, which largely limits sulfur acid making and the capacity of the whole process. To set a precedent and ensure its technical capability and operational compliance with Australian standard, a future follow-up work will witness further optimization of the sulfur melting system.

Technically, there are six molten sulfur coils within the tank to transfer low pressure steam of about 7-9MP from boiler steam pipeline. The heat which is around 110 degree Celsius from those coils passes to melt sulfur particles within the tank. The mixer within the tank operates non-stop to ensure thorough mixing.





| NAME | Nautilus Minerals Inc. | Solwara 1 |
|--------------|------------------------|---------------|
| LOCATION | Bismarck Sea | New Ireland |
| OWNERSHIP | Epion | 22.4% |
| | Anglo American | 5.7% |
| | Teckcominco | 7.2% |
| STATUS | ML 1196 | |
| YEAR GRANTED | January 2011 | RENEWAL GRANT |
| EXPIRY DATE | | EXPIRY DATE |

Nautilus is the first company to explore the ocean floor for polymetallic seafloor massive sulphide deposits. Nautilus was granted the first mining lease for such deposits at the prospect known as Solwara 1, in the territorial waters of Papua New Guinea, where it is aiming to produce copper, gold and silver. The company has also been granted its environmental permit for this site.

Nautilus Minerals Solwara 1 project is under a Mining Lease, ML 1196 (MLA 154). Other Solwara (2-15) projects are still Exploration Licenses (EL).

Nautilus Minerals Inc. (Nautilus) is a seafloor resource exploration and development company that intends to commercially explore the seafloor for copper-, gold-, silver- and zinc-rich seafloor massive sulphide deposits and for manganese, nickel, copper and cobalt nodule deposits.

The Solwara 1 site is located 30 km off the shore of PNG in the Bismarck Sea near an area known as the "Coral Triangle". This area occupies approximately 2% of the Earth's seafloor, yet it contains 76% of the world's coral population and 37% of the world's coral fish population.29 The proposed Solwara 1 mine site is not near the coral reef area, as it is located 30 km offshore at a depth of 1,600m, far below the phototrophic level where sunlight reaches.

Nautilus has formed a joint venture with Eda Kopa (Solwara) Limited, a wholly owned subsidiary of Petromin PNG Holdings Limited, which is the nominee entity of the Independent State of Papua New Guinea for the Solwara 1 Project. Located in the Bismarck Sea of Papua New Guinea (PNG), the Solwara 1 project will be the world's first deep seabed mining project for copper minerals.

UPDATE

In August this year, the company announced that the contract for the vessel integrated control system (including dynamic positioning and navigation sys-



tems) to be used on the Company's Production Support Vessel (PSV), was been awarded to Kongsberg Maritime, located in Norway. This is yet another key contract to be awarded by the shipyard, Fujian Mawei Shipbuilding Limited.

Nautilus expects the PSV to be ready by the first quarter of 2018.

About the Integrated Vessel Control System

The integrated vessel control system (IVCS) package comprises dynamic positioning, marine automation, information management and navigation systems. The IVCS will keep the vessel within specified position and heading limits while operations are per-

nuary - June 2015







Figure 1



Figure 1. Production machines Picture by Nautilus Minerals Inc. Figure 2. Drill core samples Picture by Nautilus Minerals Inc.

Figure 3. A chimney sample being mounted for display Picture by MRA

formed. The system will also provide oversight and control of critical vessel systems ensuring efficient operation of the vessel and minimising fuel consumption and wear and tear on the propulsion equipment. Kongsberg Maritime has supplied more than 2500 dynamic positioning systems worldwide.

Seafloor Production Tools (SPTs)

The Bulk Cutter, Collecting Machine and the Auxiliary Cutter are all currently being built at Soil Machine Dynamic's (SMD) facility in England. If all goes well and the machines pass the Factory Acceptance Test (FAT), the company will get delivery of the machines by end of 2015.

The three umbilical winches that store and manage the power and control umbilicals have successfully completed FAT. They were also designed, procured and assembled at SMD.

The umbilical cables will soon be installed onto the umbilical winches and they are expected to be delivered to the shipyard by the last quarter of 2015 for integration on to the Production Support Vessel (PSV).

Launch and Recovery System (LARS)

The LARS which will be used to lift the tools in and



out of the water, is comprised of A frames, lift winches, hydraulic power units, electric power units and deck control cabins. They are complete and in storage at the individual manufacturers locations in Poland, Korea and Norway respectively. The LARS are expected to be fitted at the shipyard in late 2015 or early 2016.

Riser and Lifting System (RALS)

GE Oil and Gas, the primary contractor for the RALS manufacture, has begun retrieval and inspection of the components that were previously in storage or in mid assembly when the contracts were terminated in 2012. These components are to be integrated onto the PSV during vessel manufacture.

Work on the Subsea Slurry Lift Pump (SSLP) is currently in progress. The company expects the completion and delivery of the riser and ancillary equipment by the end of 2015.

| Name | Wafi Golpu Project |
|----------------------|---|
| Location | Bulolo, Morobe Province |
| Ownership | 50:50 % Harmony Gold Ltd & Newcrest Ltd |
| Operator | Morobe Mining Joint Venture Ltd |
| Exploration Licenses | 440, 1105 |
| Total Area | |

The Wafi Golpu project is jointly owned by the Harmony Gold of South Africa and Newcrest of Australia, under a JV company called Morobe Mining JV.

It comprises of three major prospects, Wafi, Golpu and Nambonga. By world standard it is one of the top five undeveloped projects, with huge potential to grow with further resource improvement and exploration.

The project is well advanced, going through various stages of the feasibility studies.

LOCATION

The project is 65 kilometers, south west of Lae city, nearer to the mining township of Wau.

GEOLOGY

The area is intruded by the late Cretaceous Mt. Victor Granodiorite to the northwest, the Mid-Miocene Morobe Granodiorite to the east and by numerous diorite and Granodiorite bodies including those at the Wamum and Idzan Creek prospects and the Golpu diatreme.

The area is crossed by westnorthwest-south-southeast arcparallel faults of the New Guinea Thrust Belt and by orthogonal northnortheast-south-southwest transfer faults, such as the Victor Transfer,



Figure 1: Wafi regional location



Figure 2 images: Courtesy of Morobe Mining JV

January - June 2015



Figure 2 a: Wafi Golpu Resource Provinces

the Wafa Transfer and the Wafi Transfer, which together comprise part of the Aure Deformation Zone.

Such transfer zones are regarded as fundamental controls in the emplacement of porphyry bodies on a global scale and have played the same role in localization of the Wafi-Golpu deposit and epithermal gold and porphyry Cu-Au deposits elsewhere in Papua New Guinea.

The Wafi system is a structurally controlled epithermal gold deposit with oxide base, and the Golpu is a large copper gold porphyry system.

It is a high sulphidation epithermal system with complex zonation of hydrothermal alteration assemblages around central diatreme core intruded by suite of dioritic and dacitic porphyries. Gold is associated with fine-grained arsenical pyrite.

RESOURCES

The Wafi-Golpu project has over one billion tons of resources, containing 5.4 million tonnes of copper and 12.4 million ounces of gold, with annual production of 290,000 tonnes of copper and 490,000 ounces of gold, in a 26-30 years mine life. There is great potential for upsides in resources hence mine life.

MINING OPTIONS (Feasibility)

Mining will be by open pit, on Wafi deposit, and by underground involving block caving the Golpu resources. Options proposed in the pre-feasibility





studies are being revised on both; the underground exploration and eventual block cave mining.

The current studies when completed should show confirm the options.

Greater ore-body knowledge is critical to progressing the project. Therefore there is a great deal of geological, geotechnical, hydrological and metallurgical



Tenement Map

work to be done to prepare a comprehensive project resources and mining plan.

The government of Papua New Guinea is expecting the Wafi Golpu feasibility studies report by the late 2016/early 2017.

COMMUNITY AFFAIRS.



The company continues to support the communities around the project area with needed services and infrastructure. They have built classrooms for schools, provided health extension services and health centers. Some examples of their achievements are;

- 5 x Water supply projects (K443,036)
- 25x Community Building projects (K4.65 million)
- Demakwa Buildings (4)
- LOA Buildings(4)
- Health Buildings(7)
- Education Buildings(10)

| Ianuarv | - June 2015 |
|---------|-------------|
| Junuary | June Lorio |

| Name | Crater Mountain Project |
|------------|---------------------------------------|
| Location | Lufa, Eastern Highlands Province |
| Ownership | 100% Crater Gold Mining Ltd |
| Operator | Crater Gold Mining Ltd |
| Licenses | EL.1115, EL1353, EL1384; ML510 |
| Total Area | 172 km ² |



Figure 1: Crater Gold Mining Ltd Licenses

Crater Mountain comprises three exploration licenses spanning approximately 172 km2 of an eroded Pliocene age volcano in the PNG highlands. The project is managed by Crater Gold Mining Ltd.

The company was granted a mining license (ML 510) in November, 2015. It's been mining underground along the high grade veins since then.

LOCATION

The project is located approximately 50 km southwest of Goroka, the provincial centre for the Eastern Highlands Province, PNG. It three licenses extends almost to the border between the Chimbu and Eastern Highland Provinces

GEOLOGY

The Crater Mountain geology is structurally complex

with all the hallmarks of a large mineralized system. It is highly prospective for the discovery of a world class multimillion ounce gold deposit. Local geology is dominated by the Crater Mountain Volcanic Complex, one of a series of strato-volcanoes situated in the PNGthrust belt along the leading edge of the Australian Continental Plate. The volcanic complex includes two large craters over one kilometer in diameter, and approximately thirty small vents along with hot springs and associated sub-volcanic intrusives spread over more than 200 square kilometers formed after two separate phases of volcanism which are underlain by marine sediments of the Chim Formation. Mineralization and alteration is widespread in the volcanic sequences and the Chim Formation.



Figure 3: High grade zone in the Nevera prospect.

RESOURCE

While the current focus remains on the HGZ mine, there remains potential to increase the current JORC compliant resource of 24Mt at 1.0 g/t Au for 790,000 ounces at the nearby Mixing Zone project at Crater Mountain Mineralisation is confined to numerous narrow highly oxidized veins trending approximately north-south direction with several cross cutting east west structures

MINING

Underground mining has commenced in the Nevera prospect, along the veins of the high grade zone (HGZ). As it mines this vein, it will continue to explore the various mineral systems of the project to prove up resources.

The current resource grade being mined is 6.0 g/t gold.

Its first sale of gold, 17.7 ounces was in May 2014, from the implementation period. The company's target is to ramp up processing.

It is upgrading its plant towards full capacity, in a period of 3-4 months, with anticipation to mining the bonanza grade zone that registered grades of 847 g/t gold.

When full capacity gold mining is reached, the Company anticipates producing 10,000 ounces of gold in its first full year of operation.

CRATER GOLD MINING'S OTHER PROJECTS.

There hasn't been much change in the information reported in the last issue of this bulletin.

The Nimi Prospect

The Nimi prospect is located 12 km SSE of Nevera, it is the highest priority target after Nevera. It has a similar geological setting to Nevera and similar styles of mineralisation have been observed there. The prospect was identified by anomalous gold in stream sediment samples with follow up rock chip sampling returning values to 7.10 g/t Au, 1,060 g/t Ag, 1.35 Cu, 6.4% Pb and 15.65% Zn.

In recent months detailed rock chip sampling of the Nimi and Yuha creeks has been undertaken in an attempt to define drill targets.

The Masi Creek Prospect

The Masi Creek prospect is located 4 km east of Nevera; it also has a similar geological setting to



Figure 5: The Crater Mountain Project and Other Prospect Locations

Nevera with basement Chim Formation sediments underlying a volcanic pile which have subsequently been intruded by several felsic bodies resulting in alteration and mineralisation.

The prospect is centered on two apparent NW – SE structures which have possibly controlled the emplacement of the felsic intrusives. The prospect was first identified by anomalous stream geochemistry with follow up rock chip sampling returning values to 2.81 g/t Au, 3.25% Zn and 11.2 g/t Ag.

Recent shallow pits excavated within the Masi area have recorded gold values of between 0.20 g/t Au to 0.66 g/t Au within 3m of surface. An extensive soil program is planned for this area.

The Awanita Prospect

Awanita is located 10km east of Nevera, its geology is consists of Chim Formation sediments intruded by E-W trending felsic dykes which vary in width from 3 to 8m, and underlain by a larger possible porphyry intrusive.

The Chim formation is overlain by later pyroclastic sediments and dacite lavas. The area exhibits silicic and propylitic alteration, with the Chim formation strongly altered and silicified in places. Anomalous gold mineralisation has been recorded in the area with rock chip samples assaying to 4.08 g/t Au, 53 g/t Ag, 11.1% Zn, 0.26% Cu and 0.58% Pb.



| Name | Mt Kare Project |
|------------|--------------------------------|
| Location | Mt Kare, Hela & Enga Provinces |
| Ownership | 100% Indochine Mining Ltd |
| Operator | Indochine Mining Ltd |
| Licenses | EL.1093 |
| Total Area | 172 km ² |

Mt Kare has reached a stage where feasibility studies can proceed, from its pre-feasibility from 2012. The last major activity implemented on this project was a social studies on delineation of the social. Structure and land ownership within the project area, between Enga and Hela provinces. Negotiation are currently undergoing on the report from this study.

LOCATION

The project is located between Hela and Enga provinces, 15 km from the currently producing world class gold mine, Porgera; in the highlands of Papua

New Guinea

GEOLOGY

The Mount Kare gold deposit is very similar to that of the giant Porgera gold mine, only 18 km away. Both deposits are spatially associated with late Miocene alkalic intrusive complexes emplaced in Mesozoic-Tertiary shelf sedimentary sequences near the edge of the Australasian plate. Close geologic similarities between the two deposits, including the presence of quartz-roscoelite-Au veins and breccias, have spurred recent exploration efforts at Mount Kare. The Mount Kare and Porgera intrusive complexes consist of hypabyssal suites of comagmatic,



Figure 1: Mt Kare Exploration License area



Figure2: Mt Kare geology

volatile-rich mafic intrusions containing clinopyroxene, olivine, plagioclase, hornblende, chromian spinel, and apatite in melagabbros and mafic porphyries, with plagioclase, hornblende, clinopyroxene, titanian magnetite, and apatite in more evolved rocks (listed in decreasing order of abundance). Analcite occurs as an alteration phase of the groundmass and fills miarolitic cavities in evolved leucogabbros at Mount Kare but has not been observed in the Porgera intrusive complex. Least altered igneous rocks from both suites are nepheline-normative and are char-

acterized by high volatile, alumina, large ion lithophile, and high field strength element contents.

RESOURCE

The Mt Kare projects' total Mineral Resource is approximately 43 Mt at 1.5 g/t Au for 2.1 Moz Au, 18 Moz Ag or a 2.5 million ounce gold equivalent, with nearly 75% in the higher confidence as at June, 2014.

RESOURCE

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High grade zones BZ & WRZ (Indochine Mining Ltd)

| Resource Classification | Million Tonnes | Gold g/t | Silverg/t | Gold Moz | SilverMoz | Gold Equivalent Moz ⁽¹⁾ |
|---|-------------------|----------|-----------|----------|-----------|--|
| Measured Resource | 20.2 | 1.84 | 20.9 | 1.19 | 13.5 | 1.44 |
| Indicated Resource | 8.3 | 1.29 | 8.1 | 0.34 | 2.2 | 0.38 |
| Measured and Indicated Resource (Combined) | 28.4 | 1.68 | 17.2 | 1.53 | 15.7 | 1.82 |
| Inferred Resource | 14.1 | 1.27 | 6.0 | 0.57 | 2.7 | 0.63 |
| Total Mineral Resource | 42.5 | 1.54 | 13.5 | 2.11 | 18.4 | 2.45 |

Table courtesy of Indochine Mining Ltd.

nearly 75% in the higher confidence as at June, 2014.

GOING FORWARD

Mt Kare Landowner Investigation Study was completed in 2014. Reports have this study is with vari-

ous stakeholders, i.e. landowner groups in Hela & Enga provinces, the Hela & Enga provincial governments, national government institutions such as the mineral resources authority and other interested parties.

Several meeting have progressed to validate and agree to implications contained in this report.

Exploration has slowed whilst awaiting the outcome of the above meetings. Meanwhile the company is working towards completing its feasibility studies to developing a mine.



Regula

Regulator of Exploration & Mining in Papua New Guinea

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| January | June 201 | 5 |
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| Name: | Frieda River |
|------------------|--|
| Location: | Frieda River Area, East & West Sepik Provinces |
| Operator: | PanAust |
| Ownership: | PanAust 80 %; Highlands Pacific Ltd 20 % : As of September 2014 |
| Status: | Advance Exploration- Feasibility Studies Completed; EL 58 (149 sq.km). |



Located in the north-west of Papua New Guinea, the Frieda River Project is one of Asia Pacific's largest undeveloped copper/ gold resources. The project recently, in 2014 changed hands from Xstrata to PanAust, a medium tier miner in Australasia, with a mine in Cambodia.

A final feasibility studies is underway on this project. The Government of PNG is expecting the delivery of this feasibility study report by December, 2015.

LOCATION

The Frieda prospects are located in the West Sepik Province; however activities and infrastructures for extraction mineral resources and export will be concentrated in the East Sepik Province, enabling equal participation of two Sepik Provincial governments. The project is 200 km from the coastline and 70 km from the Sepik River which is navigable by ships and barges.

GEOLOGY

The Frieda River prospect is located between the Frieda and Lagaip fault zones, two major structural features of the New Guinea Mobile Belt in the West Sepik District, Papua New Guinea. The prospect can be subdivided into three spatially and geologically different areas: Frieda Complex, Mianmin area, and Nena Diorite area.

The Frieda Complex is the remnant volcanic edifice of an island stratovolcano interstratified in the mid-Miocene Wogamush Formation. Intrusive and volcanic units in the complex are texturally similar andesitic hornblende-plagioclase porphyries and are probably comagmatic.

Pyritic replacement copper-gold and porphyry copper deposits are associated with early and late phases, respectively, of extensive district-scale advanced argillic alteration along the central axis of the Frieda Complex.

The Nena Diorite, a composite, holocrystalline, intermediate to mafic body, intrudes Upper Cretaceous- to Eocene-age basement rocks.

It is located north of, and separated from the Frieda Complex by, the Frieda Fault. Igneous activity in the Frieda River prospect extended over an interval of at least 4 million years.

On the basis of field relations and K-Ar ages, this igneous activity is subdivided into early intrusion and at later alteration events. K-Ar ages on alunite appear to be too young to be those of formation of this mineral, and the oldest (13.0 + or - 0.4 m.y.) is interpreted as a



Courtesy of PanAust 2014.

minimum age for the Nena pyritic replacement coppergold deposit.

RESOURCES

The Frieda copper project is PNG's largest undeveloped copper-gold project and one of the top 10 undeveloped open pit copper mines in the world.

It's contained resources are; 13Mt of copper, 20Moz of gold and 49Moz of silver, in a 1.8 Mt of resource @ 0.34 % copper. It is believed to contain more than Panguna's 5.3 t of copper, and 25 years of copper extracted from Ok Tedi mine.

MINE DEVELOPMENT

PanAust is taking the project into feasibility stages, with the aim to delivering the completed studies in December, 2015.

Xstrata Frieda River Limited was focussing on a large scale development, whereas PanAust is evaluating on a mid-sized development utilising existing logistical routes and that minimises infrastructure requirements, resulting in a competitive capital intensity and manageable risk project.

The average annual production from the mine will be 100,000t copper and 160,000oz gold in concentrate at



Part of the Sepik River where the project is located

a C1 cash cost of approximately US\$1.25/lb after gold credits.

Mining will be as open pit mine with low strip ratio of less than 0.6:1; with mill feed of 430M tonnes, grading 0.54% copper and 0.3g/t gold for almost 20 years mine life. The metal recovery respectively for copper and gold is, 80% to 85% and 70% to 75%

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January - June 2015
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| Name | The Gulf Copper-Gold, Coal ad Iron sands Project |
|-------------|--|
| Location | Gulf Province |
| Ownership | Mayur Resources 100% |
| Operator | Mayur Resources |
| Exploration | 2150,2151,2152,2266,2267,2268,2269,2270,2284,2297,2303,2304,2305 |
| Licenses | |
| Total Area | 28,000km ² |

The Gulf Ironsand and Coal Projects comprises 13 exploration licences spanning approximately 28,000km2 within the Gulf Province. The projects are owned and held 100 percent by Mayur Resources, an Australian company based out of Brisbane.

Introduction

Mayur Resources is a privately owned multi commodity mineral exploration company that is fully focused on Papua New Guinea. During the last year Mayur Resources had a number of exciting developments across all three subsidiaries in PNG (Mayur Iron, Mayur Energy and Mayur Exploration).

All three subsidiaries are all in the exploration and/or development stage and the key short term focus for the group is cash flow production with a prioritized development plan for Mayur Iron's lead iron and mineral sands project (as outline further below). This is will be followed by Mayur Energy (coal) and Mayur Exploration's (copper & gold) projects that will have a longer development cycle compared to bulk commodities (largely due to their geological nature).

Progress across the portfolio in PNG

Some of the recent key achievements as follows:

Mayur Iron (Heavy Mineral Sands portfolio) – Gulf / Western Province

•A maiden JORC resource was declared for Mayur Iron's initial project (iron and zircon sands) at Orokolo Bay that will achieve a 59.7% Fe product as well as a crude Zircon concentrate – this resource base is currently being expanded via a 1000+ hole drilling programme that is due to be completed by Aug 2015 and



will be followed by extensive lab assaying and metallurgical test works to provide further understanding and confidence in the deposit for the full Feasibility Study.

•Mayur has encountered and overcome a number of challenges with the drilling programme. For example, the use of appropriate drilling techniques and protocols, to ensure that the water table levels do not compromise recoveries and grade levels and results are acceptable to our independent geologists who are reporting under JORC code. Mayur Iron overcame this by comparing several similar operations globally and benchmarking this to our drilling techniques and standards. Assessing this information and tailoring this to the unique geological environment found in PNG has ensured that hundreds of holes have been successfully drilled.

• A pre-feasibility study (PFS) was completed for the Orokolo Bay Project in early 2015:



Drilling at Depot Creek Picture by Mayur Resources

⇒Forecast annual production of 1 Mtpa of titanomagnetite (at 59.7% Fe) and 30,000 – 40,000 tpa of zircon concentrate (mining via an on-shore dredge with a non-chemical processing plant).

Development concept based on an integrated transshipping (jetty, barge and trans-ship) solution that will enable cost effective transportation of product to market (this facility could also be shared by Mayur Energy for future coal exports – see below)

⇒Forecast operating costs (CFR China) at bottom of the 1st Quartile of the global cost curve (representing production of some of the lowest cost iron units globally)

Confirmed that the iron product is acceptable to Asian based steelmakers, and market leading in terms of iron content, with the added benefit of a Zircon by product.

⇒Prior to the full scale project (1 Mtpa) we completed preliminary design and engineering for a small scale pilot plant / test pit initiative to take 100,000 tonnes of mineral sands for market acceptance testing in Asia

⇒Mayur Iron has been working with CEPA and its environmental consultants and is targeting to securing the appropriate permitting for the above pilot plant by Q3 2015.

Discussions with a number of construction/ manufacturing groups will continue in parallel with this process. Contract award will be then subject to the timely receipt of the approval. Sample size testing has confirmed that Chinese based steel mills in particular are able and keen to trial the product. The exact timing for the commencement of the test pit / pilot plant will be finalised in accord with the wet/dry season as well as in coordination with the local stakeholders.

⇒Elsewhere in the Mayur Iron portfolio numerous additional paleo strandline 'on shore' mineral sands deposits have been identified via completion of extensive aerial and ground magnetics programs and regional geomorphological studies across the Gulf of Papua – this work has identified a vast pipeline of exploration targets that will be progressively explored in the future.

⇒Mayur has continued to maintain close liaison with government stakeholders and MRA with the above given that it these bulk commodities have never been developed in PNG before – and represent a tremendous opportunity for PNG.

Mayur Energy (Coal portfolio) - Gulf Province

•Completed drilling programme to delineate PNG's first JORC resource for coal that is pending final lab and coal quality tests. The logistics of exploring (for coal) in remote jungle was a challenge. With no road access, and wanting to minimise the use (and cost) of helicopters, Mayur Energy focused on transport by river and the use of man portable equipment. Many of the logistical challenges were also reduced via the invaluable support from local landowners and use of village labour and knowledge.

•It was established that deposit geology is very similar to that of East Kalimantan (Indonesia) with superior product quality characteristics (environmentally low ash (~3%) and low sulphur)

•Completed Coal quality analysis to produce a 5100 GAR coal at an in-situ level of sub 3% ash and less than 0.5% Sulphur

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•Completed preliminary studies to produce at bottom end of the 1st Quartile of the global cost curve with coal resources at surface next to deep draft rivers close to the coast line.

•Identified 120km of strike from the coast of Gulf Province northwards where further exploration is intended to take place this year.

•To enable the above Mayur has entered into an exclusive exploration and development arrangement with the neighbouring tenement holder in Gulf Province to further the development of PNG's most prospective coal deposits.

Mayur Exploration (Copper/Gold portfolio)

•Following the grant of Feni Islands Exploration License – located in same island chain as Lihir – Mayur has obtained and reviewed a huge amount of historic exploration data (collected over 20 years by 6 different companies) and compiled a database of geochem / geophysical information. This has been supplemented by confirmatory field work to enable the declaration of a maiden JORC (Inferred) resource of 650,000 Oz of gold (@ 1 g/t).

•Mayur held the inaugural Darren Lockyer Trophy (rugby league competition) on Feni Island as a community engagement initiative with teams from the local community where Mayur intends to continue exploration

•Continued exploration across the rest of the portfolio many via recon field work and sampling including Milne Bay in relation to porphyry targets on Basilaki/ Sideia islands.

Domestic Vertical Integration Opportunities

In parallel with the mineral exploration activities outlined above, Mayur is also pioneering the development of two new domestic vertical integration opportunities for PNG.

Firstly a coal fired power generation opportunity that would provide PNG with a new source of reliable and cheap power that would not only help address the current and future shortfall in installed capacity, but help stimulate economic growth in industry and manufacturing.



Float sample collected on branch of Io-Purari Creek

This would utilize the domestic coal (that is being developed by Mayur as outlined above) that is environmentally superior to neighbours such as Indonesia and Australia that burn coals up to 30% ash content. Secondly, with the occurrence of both iron and coal in the same provincial region, Mayur also has another longer term vision of utilising these key raw materials to introduce pig iron and steel capacity to PNG.

As with coal fired power, currently PNG doesn't have any domestic iron/steel production facilities. The coal would be suitable for use as the reductant agent and also as a power source for a DRI/EAF facility (or alternately from LNG producers in PNG (this dual power option enables various Direct Reduction Iron and Steelmaking technologies to be considered for PNG and supply iron/steel to PNG and the wider region). Mayur will continue to liaise with the government and other stakeholders on these exciting initiatives that will help lay the foundations for future economic growth and development for PNG.

For more information please visit our website www.mayurresources.com

| Name | Kili Teke Project |
|----------------------|--|
| Location | Hela Province |
| Ownership | 100% Harmony Gold |
| Operator | Harmony Gold Exploration (PNG) Limited |
| Exploration Licenses | EL 2310 |
| Total Area | 511.5 km ² |

The Kili Teke project, located in the Hela Province on Harmony's 100% owned greenfields tenement, is an exploration project that is fast approaching resource definition.

Drilling results have returned porphyry style mineralisation with large, highly significant copper gold intercepts.

More upside potential exists with mineralisation being open at depth and along strike, and drilling to scope out the extent and geometry of the system remains ongoing.

LOCATION

The Kili Teke prospect is located in the Hela Province, approximately 40km west-northwest of Porgera, in the



same host stratigraphy as the OK Tedi and Grasberg copper-gold deposits (refer figure below).

EXPLORATION

The area was first outlined by the CRA Exploration after regional drainage sampling in 1987 returned float samples from the Logaiyu river assaying up to 7.5 g/t Au. Subsequent work by various explorers culminated in a three-hole drill program in which one hole, KT003 returned an intercept of 134m @ 0.28% Cu and 0.37 g/t Au.

The copper-gold ratio of the intercept highlighted the potential for a gold rich copper porphyry system (eg. Golpu), and together with the regional setting and host stratigraphy, formed the basis for Harmony's tenement

application over the area.

Work completed to date by Harmony since the tenement was granted in May 2014 includes:

•preliminary social mapping

•detailed mapping and surface sampling (over 1300 samples),

•helicopter-borne detailed magneticradiometric survey (480 line km)

•and diamond drilling (currently in progress) with 13 holes 7,853m completed to date.

Initial geological mapping and surface sampling results confirmed a potentially large copper-gold porphyry style hydrothermal alteration system, including significant extensive zones of min-

Regional geological setting showing EL2310 and the Kili Teke pro-

ary - June 2015

eralised breccia and skarn that were not tested by historic drilling, and a coincident kilometer scale surface copper-gold geochemical anomaly. Within the broader anomaly footprint, four high grade copper-gold drill targets were defined including the Central Mineralised Porphyry (CMP), the Transfer Zone Porphyry (TZP), the leru Porphyry (IP), and the Gold Ridge anomaly (GRA) – refer figures below.

MINERALIZATION & RESOURCE

Drilling at Kili Teke commenced November 28 and to date comprises 13 holes for 7853m. Results have been extremely encouraging with broad mineralized intervals of copper-gold mineralization intersected in all of the holes drilled at the at the Central Mineralized Porphyry (CMP) target. Highlights from the drilling include:

| KTDD007: 131m | 422m @ 0.55% Cu, 0.43 g/t Au, from |
|-------------------|------------------------------------|
| Including 137m | 202m @ 0.74% Cu, 0.57g/t Au, from |
| KTDD012: 94m | 448m @ 0.37 % Cu, 0.27 g.t Au from |
| Including 150m | 162m @ 0.43 % Cu, 0.36 g/t Au from |
| Including 420m | 104m @ 0.51% Cu, 0.3 g/t Au from |
| KTDD013: 90m | 542m @ 0.58% Cu, 0.41 g/t Au from |



EL2310; Local community members.

| Including: 166m | 319m | @ | 0.79% | Cu, | 0.57 | g/t | Au | from |
|--------------------|--------------|---|-------|-----|------|-----|----|------|
| Including: 252m | 186 m | @ | 1.02% | Cu, | 0.72 | g/t | Au | from |

Drilling at the project is still in the early stages and an understanding of the geometry and strike of the mineralisation continues to evolve as additional drilling is completed.

The high grade intercept in KTDD013 (186m @ 1.02% Cu, 0.72 g/t Au from 252m) correlates with several intervals of intense quartz vein stockwork with disseminated and veinlet chalcopyrite and bornite, developed within potassic altered hornblende diorite.



Mineralisation extends to surface and currently (using a 0.2% copper envelope) results have outlined a zone over 600m of strike, in excess of 200m wide, and extend 700m below surface.

The mineralised zone remains open through the grid along strike and open at depth. Drilling remains in progress. A number of infill and extension holes have been planned with the objective of advancing the project to an inferred resource declaration in FY16.

EL2310; The recently constructed community building is being utilised as

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EL2310; The recently constructed community building allows rain water to be available on tap in an area where water is normally collected from



EL2310; Waterway environmental monitoring to provide baseline data has been in place since re-



EL2310; Long section view of the central mineralised porphyry target at Kili Teke, showing drill holes, selected results, and footprint of the 0.2% copper envelope defined to date



Tenement Listing November 2015

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| Code | Name | Parties | Applicat | Grant_da | Expiry_d |
|---------|-------------------------|---|------------|------------|------------|
| EL 193 | Ramu | MCC Ramu NiCo Limited (85.00%), Ramu Nickel Limited (9.00%), Mineral Resources Ramu Limited (4.00%), Mineral Resources Madang Limited (2.00%) | 1970-03-25 | 1970-12-18 | 2016-02-26 |
| EL 440 | Wafi | Wafi Mining Limited (50.00%), Newcrest PNG2 Limited (50.00%) | 1978-03-29 | 1980-03-11 | 2016-03-10 |
| EL 470 | Kainantu | Barrick (Kainantu) Limited (100.00%) | 1980-08-05 | 1982-07-05 | 2017-02-04 |
| EL 497 | Wau | Morobe Exploration Limited (50.00%), Newcrest PNG3 Limited (50.00%) | 1983-02-16 | 1984-03-01 | 2016-08-25 |
| EL 580 | Tolukuma | Tolukuma Gold Mines Limited (100.00%) | 1984-08-16 | 1985-03-07 | 2017-04-03 |
| EL 677 | Waria River | Newcrest PNG3 Limited (50.00%), Morobe Exploration Limited (50.00%) | 1986-07-22 | 1986-10-27 | 2017-02-17 |
| EL 683 | Ivani River | Tolukuma Gold Mines Limited (100.00%) | 1986-07-21 | 1986-10-27 | 2017-04-03 |
| EL 693 | Kainantu | Barrick (Kainantu) Limited (100.00%) | 1986-09-15 | 1986-12-29 | 2017-02-04 |
| EL 894 | Mt Cameron | Tolukuma Gold Mines Limited (100.00%) | 1988-12-22 | 1989-04-04 | 2017-04-03 |
| EL 1043 | Hoskins | Copper Quest PNG Limited (100.00%) | 1992-08-03 | 1992-12-08 | 2016-12-07 |
| EL 1091 | Normanby Island | Normanby Mining PNG Limited (100.00%) | 1993-09-30 | 1994-04-26 | 2016-04-25 |
| EL 1165 | Safia Embessa & Obea | Niugini Nickel Limited (100.00%) | 1995-10-31 | 1996-03-01 | 2016-02-28 |
| EL 1212 | Frieda | Frieda River Limited (80.00%), Highlands Frieda Limited (20.00%) | 1997-02-20 | 1997-05-30 | 2017-05-29 |
| EL 1312 | Nong River | Highlands Pacific Resources Limited (100.00%) | 2001-01-24 | 2002-09-20 | 2016-09-19 |
| EL 1316 | Mumeng | Newcrest PNG3 Limited (50.00%), Morobe Exploration Limited (50.00%) | 2001-06-29 | 2002-09-20 | 2016-09-19 |
| EL 1341 | Yonki | Barrick (Kainantu) Limited (100.00%) | 2003-12-09 | 2004-06-21 | 2016-06-20 |
| EL 1352 | Kunimaipa | Eda Minerals Limited (100.00%) | 2004-01-12 | 2004-10-19 | 2016-10-18 |
| EL 1369 | Tsile Tsile | Barrick (PNG) Limited (87.86%), Terenure Limited (12.14%) | 2004-05-25 | 2004-11-23 | 2016-11-22 |
| EL 1392 | Tifalmin | Highlands Pacific Resources Limited (100.00%) | 2005-02-02 | 2005-06-10 | 2017-06-09 |
| EL 1396 | Abau | Titan Metals Limited (90.00%), TVI Pacific Inc (10.00%) | 2005-04-08 | 2005-12-20 | 2015-12-19 |
| EL 1465 | Kulumadau | Woodlark Mining Limited (100.00%) | 2006-09-28 | 2008-12-22 | 2016-12-21 |
| EL 1566 | Lavongai | Papuan Precious Metals Limited (100.00%) | 2007-03-29 | 2008-05-29 | 2016-05-28 |
| EL 1590 | Wampit | Morobe Exploration Limited (50.00%), Newcrest PNG3 Limited (50.00%) | 2007-08-01 | 2008-11-03 | 2016-11-02 |
| EL 1614 | Garaina | Pacific Niugini Minerals (PNG) Limited (100.00%) | 2007-10-05 | 2008-07-07 | 2016-07-06 |
| EL 1629 | Garaina | Morobe Exploration Limited (50.00%), Newcrest PNG3 Limited (50.00%) | 2007-12-07 | 2008-11-03 | 2016-11-02 |
| EL 1677 | Kauwol | Ok Tedi Mining Limited (100.00%) | 2008-08-18 | 2009-03-25 | 2017-03-24 |
| EL 1696 | Mt Yule | Eda Minerals Limited (100.00%) | 2008-11-18 | 2010-02-19 | 2016-02-18 |
| EL 1743 | Magleri | Frieda River Limited (80.00%), Highlands Frieda Limited (20.00%) | 2009-08-12 | 2010-06-21 | 2016-06-20 |
| EL 1744 | Iniok | Frieda River Limited (80.00%), Highlands Frieda Limited (20.00%) | 2009-08-13 | 2010-06-21 | 2016-06-20 |
| EL 1745 | Magleri | Frieda River Limited (80.00%), Highlands Frieda Limited (20.00%) | 2009-08-13 | 2010-06-21 | 2016-06-20 |
| EL 1746 | Magleri | Frieda River Limited (100.00%) | 2009-08-13 | 2010-06-21 | 2016-06-20 |
| EL 1748 | Mumeng | Barrick (PNG) Limited (87.86%), Terenure Limited (12.14%) | 2009-08-20 | 2012-09-27 | 2016-09-26 |
| EL 1761 | Esa!ala | Highlands Pacific Resources Limited (100.00%) | 2009-11-02 | 2012-03-12 | 2016-03-11 |
| EL 1781 | Munbil | Highlands Pacific Resources Limited (100.00%) | 2010-02-16 | 2012-03-12 | 2016-03-11 |
| EL 1803 | Meteken | Aries Mining Limited (100.00%) | 2010-03-26 | 2014-05-13 | 2016-05-12 |
| EL 1804 | Ania | Aries Mining Limited (100.00%) | 2010-03-26 | 2015-09-11 | 2017-09-10 |
| EL 1857 | Yangoru | Alexander Mining Limited (100.00%) | 2010-07-28 | 2012-01-23 | 2016-01-22 |
| EL 1873 | Kabarau | Waterford Limited (100.00%) | 2010-08-16 | 2012-05-15 | 2016-05-14 |
| EL 1874 | Kare | Waterford Limited (100.00%) | 2010-08-16 | 2012-05-15 | 2016-05-14 |

| | | | | | January - June 2015 |
|---------|------------------|--|------------|------------|---------------------|
| EL 1875 | Wabo | Waterford Limited (100.00%) | 2010-08-16 | 2012-05-15 | 2016-05-14 |
| EL 1877 | Lihir South | Bismarck Mining Corporation (PNG) Limited (100.00%) | 2010-08-17 | 2012-10-08 | 2016-10-07 |
| EL 1895 | Wabia | Frieda River Limited (80.00%), Highlands Frieda Limited (20.00%) | 2010-09-29 | 2012-05-15 | 2016-05-14 |
| EL 1896 | Kubkaain | Frieda River Limited (80.00%), Highlands Frieda Limited (20.00%) | 2010-09-29 | 2012-05-15 | 2016-05-14 |
| EL 1942 | Kuta Ridge | Gog River Limited (100.00%) | 2011-01-24 | 2013-11-11 | 2015-11-10 |
| EL 1956 | Ok Isai | Frieda River Limited (80.00%), Highlands Frieda Limited (20.00%) | 2011-03-11 | 2012-05-15 | 2016-05-14 |
| EL 1957 | Paupe | Frieda River Limited (80.00%), Highlands Frieda Limited (20.00%) | 2011-03-11 | 2012-05-15 | 2016-05-14 |
| EL 1972 | Gameta | Anomaly Limited (100.00%) | 2011-04-18 | 2012-12-20 | 2016-12-19 |
| EL 1980 | Embessa | Niugini Nickel Limited (100.00%) | 2011-04-29 | 2012-09-27 | 2016-09-26 |
| EL 2001 | Benstead | Highlands Pacific Resources Limited (100.00%) | 2011-06-06 | 2012-12-20 | 2016-12-19 |
| EL 2007 | Wabag | Pristine No. 18 Limited (100.00%) | 2011-06-09 | 2015-01-19 | 2017-01-18 |
| EL 2008 | Wabag | Pristine No. 18 Limited (100.00%) | 2011-06-09 | 2014-10-27 | 2016-10-26 |
| EL 2013 | Garawaria | Pacific Niugini Minerals (PNG) Limited (100.00%) | 2011-06-14 | 2012-03-12 | 2016-03-11 |
| EL 2014 | Makmak | Copper Ouest PNGLimited (100.00%) | 2011-06-17 | 2012-05-15 | 2016-05-14 |
| EL 2050 | Mapuna | Aries Mining Limited (100.00%) | 2011-07-22 | 2012-09-27 | 2016-09-26 |
| EL 2051 | Mt Nambom | Aries Mining Limited (100.00%) | 2011-07-22 | 2012-09-27 | 2016-09-26 |
| EL 2096 | Warambif | Mayur Exploration PNGLimited (100.00%) | 2011-09-13 | 2014-08-05 | 2016-08-04 |
| EL 2122 | Pomio | Unichamp Jaquinot Limited (100.00%) | 2011-11-07 | 2012-05-09 | 2016-05-08 |
| EL 2126 | Sibilanga | Kawari Limited (100.00%) | 2011-11-10 | 2014-02-25 | 2016-02-24 |
| EL 2129 | West Coast Wewak | Kilclare Limited (100.00%) | 2011-12-05 | 2013-11-11 | 2015-11-10 |
| FL 2130 | Bewani | Kilclare Limited (100.00%) | 2011-12-05 | 2015-05-22 | 2017-05-21 |
| EL 2156 | Tabubil | Ok Tedi Mining Limited (100.00%) | 2012-02-16 | 2012-12-20 | 2016-12-19 |
| EL 2162 | Ruti | Quintessential Resources (PNG) Limited (100.00%) | 2012-04-03 | 2013-11-11 | 2015-11-10 |
| FL 2203 | Crater Mountain | Anomaly Limited (100.00%) | 2012-05-25 | 2015-09-11 | 2017-09-10 |
| EL 2205 | Dagua | Alexander Mining Limited (100.00%) | 2012-05-23 | 2013-03-11 | 2016 02 01 |
| EL 2212 | Tabubil | Lava Limited (100.00%) | 2012-09-27 | 2014-02-02 | 2016-02-01 |
| EL 2255 | Tabubil | Ok Tadi Mining Limited (100.00%) | 2012-09-27 | 2013 05 20 | 2017 05 19 |
| EL 2250 | Koinamhe | Marengo Mining (PNG) Limited (100.00%) | 2012-11-05 | 2013-05-20 | 2016-06-29 |
| EL 2263 | Tabubil | Lava Limited (100 00%) | 2012-11-13 | 2014-04-16 | 2016-04-15 |
| EL 2266 | Kiwai Island | Mayur Iron PNGLimited (100.00%) | 2012-11-23 | 2014-05-14 | 2016-05-13 |
| EL 2269 | Baimuru | Mayur Iron PNGLimited (100.00%) | 2012-11-23 | 2014-05-14 | 2016-05-13 |
| EL 2270 | Mira | Mayur Iron PNGLimited (100.00%) | 2012-11-23 | 2014-05-14 | 2016-05-13 |
| EL 2272 | Wowonga | Copper Ouest PNGLimited (100.00%) | 2012-12-03 | 2014-02-25 | 2016-02-24 |
| EL 2274 | Lufa | Manase Group (PNG) Limited (100.00%) | 2012-12-18 | 2013-11-11 | 2015-11-10 |
| EL 2281 | Maruta | Titan Mines Limited (100.00%) | 2013-03-13 | 2014-02-03 | 2016-02-02 |
| EL 2282 | Halopa | Pento Resources PNGLimited (100.00%) | 2013-04-05 | 2014-12-19 | 2016-12-18 |
| EL 2284 | Kerema Seas | Mayur Iron PNGLimited (100.00%) | 2013-04-15 | 2014-05-14 | 2016-05-13 |
| EL 2285 | Omu | IBC Pacific Limited (100.00%) | 2013-04-23 | 2014-10-27 | 2016-10-26 |
| EL 2287 | Chuave | Simbu Limestone Development Corporation Limited (100.00%) | 2013-04-26 | 2014-02-25 | 2016-02-24 |
| EL 2288 | Chuave | Simbu Limestone Development Corporation Limited (100.00%) | 2013-04-26 | 2014-02-25 | 2016-02-24 |

| EL 2302 | Bulolo | Kilcoo Limited (100.00%) | 2013-08-19 | 2014-02-25 | 2016-02-24 |
|---------|----------------------------|---|------------|------------|------------|
| EL 2303 | Pinu Village | Mayur Iron PNGLimited (100.00%) | 2013-08-22 | 2014-05-14 | 2016-05-13 |
| EL 2304 | Terapo | Mayur Iron PNGLimited (100.00%) | 2013-08-22 | 2014-05-14 | 2016-05-13 |
| EL 2305 | Ihu | Mayur Iron PNGLimited (100.00%) | 2013-08-22 | 2014-05-14 | 2016-05-13 |
| EL 2309 | Tsile Tsile | Rio Tinto Exploration (PNG) Limited (100.00%) | 2013-10-23 | 2014-09-10 | 2016-09-09 |
| EL 2310 | Hauwindi | Harmony Gold (PNG) Exploration Limited (100.00%) | 2013-10-25 | 2014-05-24 | 2016-05-23 |
| EL 2313 | Wau | Newcrest PNG3 Limited (50.00%), Morobe Exploration Limited (50.00%) | 2013-12-12 | 2014-12-24 | 2016-12-23 |
| EL 2314 | Bulolo | Kilcoo Limited (100.00%) | 2014-02-26 | 2015-11-02 | 2017-11-01 |
| EL 2315 | Boana | Sarawaget Minerals Limited (100.00%) | 2014-03-13 | 2015-06-12 | 2017-06-11 |
| EL 2318 | Haia Village | Anomaly Limited (100.00%) | 2014-04-07 | 2015-09-11 | 2017-09-10 |
| EL 2321 | Kau Creed | Pacific Niugini Minerals (PNG) Limited (100.00%) | 2014-05-05 | 2015-02-16 | 2017-02-15 |
| EL 2322 | Ulpuna | Sagittarius Mining Limited (100.00%) | 2014-05-19 | 2015-09-11 | 2017-09-10 |
| EL 2324 | Tambu Bay | Komomoa Energy Resources PNGLimited (100.00%) | 2014-05-29 | 2015-05-22 | 2017-05-21 |
| EL 2325 | Rambusa-Sudest Island | Aus PNGMining Limited (100.00%) | 2014-06-04 | 2014-12-19 | 2016-12-18 |
| EL 2329 | Bulolo | Niugini Gold Mining Limited (100.00%) | 2014-06-24 | 2015-04-27 | 2017-04-26 |
| EL 2330 | Ningerum | Appolo Exploration and Mining Limited (100.00%) | 2014-06-30 | 2014-10-27 | 2016-10-26 |
| EL 2331 | Port Moresby, Metago | Koori No.9 Limited (100.00%) | 2014-07-16 | 2015-11-02 | 2017-11-01 |
| EL 2334 | Ubaigubi | Anomaly Limited (100.00%) | 2014-07-21 | 2015-05-22 | 2017-05-21 |
| EL 2335 | Maimafu | Anomaly Limited (100.00%) | 2014-07-21 | 2015-05-22 | 2017-05-21 |
| EL 2337 | Embessa and Wanigela | Niugini Nickel Limited (100.00%) | 2014-07-24 | 2015-11-02 | 2017-11-01 |
| EL 2339 | Kainantu | Dansar Mining Limited (100.00%) | 2014-08-19 | 2015-05-22 | 2017-05-21 |
| EL 2340 | Henganofi | Dansar Mining Limited (100.00%) | 2014-08-19 | 2015-05-22 | 2017-05-21 |
| EL 2341 | Bitoi | Terra Resources Limited (100.00%) | 2014-08-22 | 2014-12-24 | 2016-12-23 |
| EL 2353 | Ainbul | Sagittarius Mining Limited (100.00%) | 2015-01-19 | 2015-09-11 | 2017-09-10 |
| EL 2362 | Bolobip & Fagobip Villages | Niuminco (ND) Limited (100.00%) | 2015-02-17 | 2015-11-02 | 2017-11-01 |
| EL 2368 | Asaro Station | Giopa Holdings Limited (100.00%) | 2015-02-19 | 2015-07-03 | 2017-07-02 |
| EL 2379 | Simuku and Ismin | Copper Ouest PNGLimited (100.00%) | 2015-04-09 | 2015-09-11 | 2017-09-10 |

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| Code | Name | Parties | Status | Applicat | Grant_da | Expiry_d |
|---------|-------------------|--|-------------------|------------|------------|------------|
| EL 1 | Kieta | CRA Minerals (PNG) Limited (100.00%) | PENDING_RENEWAL | 1964-12-21 | 1965-04-02 | 2015-03-01 |
| EL 2 | Kieta | CRA Minerals (PNG) Limited (100.00%) | PENDING_RENEWAL | 1964-12-21 | 1965-04-02 | 2015-04-01 |
| EL 3 | Kieta | CRA Minerals (PNG) Limited (100.00%) | PENDING_RENEWAL | 1964-12-21 | 1965-04-02 | 2015-04-01 |
| EL 4 | Kieta | CRA Minerals (PNG) Limited (100.00%) | PENDING_RENEWAL | 1964-12-21 | 1965-04-02 | 2015-04-01 |
| EL 5 | Kieta | CRA Minerals (PNG) Limited (100.00%) | PENDING_RENEWAL | 1964-12-21 | 1965-04-02 | 2015-04-01 |
| EL 6 | Kieta | CRA Minerals (PNG) Limited (100.00%) | PENDING_RENEWAL | 1964-12-21 | 1965-04-02 | 2015-04-01 |
| EL 7 | Kieta | CRA Minerals (PNG) Limited (100.00%) | PENDING_RENEWAL | 1965-11-29 | 1967-02-04 | 2015-02-03 |
| EL 58 | Frieda River | Frieda River Limited (80.00%), Highlands Frieda Limited (20.00%) | PENDING_RENEWAL | 1967-08-10 | 1968-03-20 | 2015-11-14 |
| EL 454 | Porgera | Barrick (Niugini) Limited (72.00%), Barrick (Goldfields PNGHoldings) Limited (28.00%) | PENDING_RENEWAL | 1980-02-08 | 1980-03-31 | 2014-08-24 |
| EL 485 | Londolovit | Lihir Gold Limited (100.00%) | PENDING_RENEWAL | 1983-02-02 | 1983-06-19 | 2014-03-31 |
| EL 609 | Mapua | Nord Australex Nominees (PNG) Limited (100.00%) | PENDING_RENEWAL | 1985-03-04 | 1985-05-06 | 2015-05-05 |
| EL 858 | McNicoll Range | Barrick (Goldfields PNGHoldings) Limited (72.00%), Barrick (Niugini) Limited (28.00%) | PENDING_RENEWAL | 1988-02-17 | 1988-05-25 | 2014-08-24 |
| EL 1069 | Sehulea | Normanby Mining PNGLimited (100.00%) | PENDING_RENEWAL | 1993-05-17 | 1994-01-06 | 2016-01-05 |
| EL 1093 | Mt Kare | Summit Development Limited (100.00%) | PENDING_RENEWAL | 1993-10-07 | 1994-08-29 | 2014-08-28 |
| EL 1103 | Zilani | Newcrest PNG3 Limited (50.00%), Morobe Exploration Limited (50.00%) | PENDING_RENEWAL | 1993-11-30 | 1999-12-13 | 2015-12-12 |
| EL 1105 | Wafi Mt | Newcrest PNG2 Limited (50.00%), Wafi Mining Limited (50.00%) | PENDING_RENEWAL | 1994-01-07 | 1995-01-26 | 2015-01-25 |
| EL 1115 | Mt Crater | Anomaly Limited (100.00%) | PENDING_RENEWAL | 1994-02-01 | 1994-09-26 | 2014-09-25 |
| EL 1140 | Riet Village | Niugini Gold Limited (90.00%), Goldmines of Niugini Holdings Limited (10.00%) | PENDING_RENEWAL | 1994-12-12 | 1995-05-11 | 2013-05-10 |
| EL 1170 | Mahur Island | Lihir Gold Limited (100.00%) | PENDING_RENEWAL | 1996-02-19 | 1996-06-21 | 1998-06-20 |
| EL 1172 | Kulumadau | Woodlark Mining Limited (100.00%) | PENDING_RENEWAL | 1996-02-23 | 1997-11-28 | 2015-11-27 |
| EL 1196 | Namatanai | Nautilus Minerals Niugini Limited (100.00%) | PENDING_RENEWAL | 1996-11-13 | 1997-11-28 | 2015-11-27 |
| EL 1264 | Gunim | Tolukuma Gold Mines Limited (100.00%) | PENDING_RENEWAL | 1998-08-06 | 1999-04-30 | 2015-04-29 |
| EL 1279 | Kulumadau | Woodlark Mining Limited (100.00%) | PENDING_RENEWAL | 1999-03-09 | 1999-08-26 | 2015-08-25 |
| FI 1004 | Kukuia Pen- | | DENIDING DENIEMAA | 2002.00.00 | 2002.05.01 | 2012 04 20 |
| EL 1324 | insula | Vangold (PNG) Limited (100.00%) | PENDING_RENEWAL | 2002-09-06 | 2003-05-01 | 2013-04-30 |
| EL 1335 | Bundi | Yandera Mining Company Limited (100.00%) | PENDING_RENEWAL | 2003-08-08 | 2003-11-20 | 2015-11-19 |
| EL 1365 | Wau | NVL (PNG) Limited (100.00%) | PENDING_RENEWAL | 2004-05-07 | 2006-06-05 | 2014-06-04 |
| EL 13/4 | Namatanai | Nautilus Minerais Niugini Limited (100.00%) | PENDING_RENEWAL | 2004-06-16 | 2004-09-10 | 2008-09-09 |
| EL 1390 | Kokoda Mi D | | PENDING_RENEWAL | 2004-12-15 | 2005-06-10 | 2015-06-09 |
| EL 1391 | Bolobip Sta- | Kawari Limited (100.00%) | PENDING_RENEWAL | 2005-01-19 | 2005-12-20 | 2013-12-19 |
| EL 1438 | tion | Niuminco (ND) Limited (100.00%) | PENDING_RENEWAL | 2006-07-12 | 2007-09-18 | 2015-09-17 |
| | Hotmin & | | | | | |
| EL 1441 | Ama | Niuminco (ND) Limited (100.00%) | PENDING_RENEWAL | 2006-07-12 | 2007-09-18 | 2015-09-17 |
| EL 1453 | Tamo Village | Brothers and Together PNGLimited (100.00%) | PENDING_RENEWAL | 2006-08-21 | 2007-05-04 | 2013-05-03 |
| EL 1462 | Kimbe | Sagittarius Mining Limited (100.00%) | PENDING_RENEWAL | 2006-09-08 | 2007-09-18 | 2015-09-17 |
| EL 1595 | Bulago River | Frontier Gold (PNG) Limited (100.00%) | PENDING_RENEWAL | 2007-08-09 | 2008-07-07 | 2014-07-06 |
| EL 1611 | Mangiki | Regional Resources (PNG) Limited (100.00%) | PENDING_RENEWAL | 2007-10-04 | 2008-11-28 | 2014-11-27 |
| EL 1661 | Tolukuma | Eda Minerals Limited (100.00%) | PENDING_RENEWAL | 2008-05-19 | 2009-05-11 | 2015-05-10 |
| EL 1704 | Obura | Barrick (PNG) Limited (87.86%), Terenure Limited (12.14%) | PENDING_RENEWAL | 2008-12-23 | 2009-11-25 | 2015-11-24 |
| EL 1705 | Obura | Barrick (PNG) Limited (87.86%), Terenure Limited (12.14%) | PENDING_RENEWAL | 2008-12-23 | 2009-11-25 | 2015-11-24 |
| EL 1727 | Bismarck | Quintessential Resources (PNG) Limited (100.00%) | PENDING_RENEWAL | 2009-05-18 | 2010-02-19 | 2014-02-18 |
| EL 1728 | Henganofi | KSOS Limited (100.00%) | PENDING_RENEWAL | 2009-05-26 | 2010-02-19 | 2014-02-18 |
| EL 1734 | Moveave | Hells Gate Exploration Limited (100.00%) | PENDING_RENEWAL | 2009-06-19 | 2012-05-15 | 2014-05-14 |

| EL 1747 | Misima Island | Gallipoli Exploration (PNG) Limited (100.00%) | PENDING_RENEWAL | 2009-08-19 | 2011-03-21 | 2015-03-20 |
|---------|---------------|--|-----------------|------------|------------|------------|
| EL 1765 | Chuave | Kair Engineering Limited (100.00%) | PENDING_RENEWAL | 2009-11-13 | 2011-03-21 | 2015-03-20 |
| EL 1782 | Powell | Copper Quest PNGLimited (100.00%) | PENDING_RENEWAL | 2010-02-22 | 2013-09-25 | 2015-09-24 |
| EL 1854 | Lila Village | Yandera Mining Company Limited (100.00%) | PENDING_RENEWAL | 2010-06-18 | 2011-07-29 | 2015-07-28 |
| EL 1876 | Kare | Waterford Limited (100.00%) | PENDING_RENEWAL | 2010-08-16 | 2012-05-15 | 2014-05-14 |
| EL 1966 | Wabag 1 | Viva No. 20 Limited (100.00%) | PENDING_RENEWAL | 2011-04-04 | 2013-06-27 | 2015-06-26 |
| EL 1967 | Wabag 2 | Viva No. 20 Limited (100.00%) | PENDING_RENEWAL | 2011-04-04 | 2013-11-28 | 2015-11-27 |
| EL 1968 | Wabag 3 | Viva No. 20 Limited (100.00%) | PENDING_RENEWAL | 2011-04-04 | 2013-11-28 | 2015-11-27 |
| EL 1982 | Buso | Katana Iron Limited (100.00%) | PENDING_RENEWAL | 2011-05-09 | 2011-10-31 | 2015-10-30 |
| EL 2006 | Wabag | Pristine No. 18 Limited (100.00%) | PENDING_RENEWAL | 2011-06-09 | 2013-09-25 | 2015-09-24 |
| EL 2040 | Mt Hagen | Mayur Exploration PNGLimited (100.00%) | PENDING_RENEWAL | 2011-06-30 | 2012-09-27 | 2014-09-26 |
| EL 2094 | Cenkau | Mayur Exploration PNGLimited (100.00%) | PENDING_RENEWAL | 2011-09-13 | 2012-09-27 | 2014-09-26 |
| EL 2095 | Sideia | Mayur Exploration PNGLimited (100.00%) | PENDING_RENEWAL | 2011-09-13 | 2012-09-27 | 2014-09-26 |
| EL 2149 | Amazon Bay | Titan Metals Limited (100.00%) | PENDING_RENEWAL | 2011-12-20 | 2013-09-25 | 2015-09-24 |
| EL 2150 | Gulf South | Mayur Exploration PNGLimited (100.00%) | PENDING_RENEWAL | 2011-12-20 | 2012-12-18 | 2014-12-17 |
| EL 2151 | Gulf Central | Mayur Exploration PNGLimited (100.00%) | PENDING_RENEWAL | 2011-12-20 | 2012-12-18 | 2014-12-17 |
| EL 2180 | Wapolu | Crater Gold Mining Limited (100.00%) | PENDING_RENEWAL | 2012-05-04 | 2013-06-27 | 2015-06-26 |
| EL 2228 | Telefomin | Lava Limited (100.00%) | PENDING_RENEWAL | 2012-06-27 | 2013-05-27 | 2015-05-26 |
| EL 2249 | Gwasa | Anomaly Limited (90.00%), Terenure Limited (8.00%), Celtic Minerals Limited (2.00%) | PENDING_RENEWAL | 2012-08-20 | 2013-11-11 | 2015-11-10 |
| EL 2276 | Tabubil | Ok Tedi Mining Limited (100.00%) | PENDING_RENEWAL | 2013-01-08 | 2013-09-10 | 2015-09-09 |
| EL 2289 | Tabubil | Ok Tedi Mining Limited (100.00%) | PENDING_RENEWAL | 2013-04-29 | 2013-11-19 | 2015-11-18 |

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| Code | Name | Parties | Applicat |
|---------|------------------------------|--|------------|
| EL 1856 | Lavongai | Papuan Precious Metals Limited (100.00%) | 2010-06-29 |
| EL 1944 | Jiwaka | Western Niugini Holdings Limited (100.00%) | 2011-02-08 |
| EL 2010 | Wabag | Pristine No. 18 Limited (100.00%) | 2011-06-09 |
| EL 2056 | Lababia | GeoVic Mining Corp (100.00%) | 2011-08-04 |
| EL 2113 | Karkar Island | RG Pacific Limited (100.00%) | 2011-10-24 |
| EL 2124 | Rabaul | RG Pacific Limited (100.00%) | 2011-11-08 |
| EL 2127 | Seme | Kawari Limited (100.00%) | 2011-11-11 |
| EL 2153 | Keba Creek | Heritage Manda Gold Limited (100.00%) | 2012-01-05 |
| EL 2157 | Mt Kuta | Argonaut Resources Limited (100.00%) | 2012-02-27 |
| EL 2167 | Namaitanai | Sentawan (PNG) Limited (100.00%) | 2012-04-11 |
| EL 2182 | Freda | Vantage Rising Resources (PNG) Limited (100.00%) | 2012-05-09 |
| EL 2183 | Inaru | Vantage Rising Resources (PNG) Limited (100.00%) | 2012-05-09 |
| EL 2222 | Talasea | Kuth Energy (PNG) Limited (100.00%) | 2012-06-15 |
| EL 2225 | Iamalele | Kuth Energy (PNG) Limited (100.00%) | 2012-06-21 |
| EL 2226 | Salamo | Kuth Energy (PNG) Limited (100.00%) | 2012-06-21 |
| EL 2267 | Segero | Mayur Iron PNGLimited (100.00%) | 2012-11-23 |
| EL 2268 | Dibiri | Mayur Iron PNGLimited (100.00%) | 2012-11-23 |
| EL 2271 | Busilmin | Lava Limited (100.00%) | 2012-12-03 |
| EL 2297 | Daru | Mayur Iron PNGLimited (100.00%) | 2013-05-13 |
| EL 2306 | Kompiam Station | Khor ENG Hock & Sons (PNG) Limited (100.00%) | 2013-10-14 |
| EL 2320 | Mt Daum | Kawari Pacific Limtied (100.00%) | 2014-04-28 |
| EL 2323 | Lake Trist | Regency Mines PLC (100.00%) | 2014-05-23 |
| EL 2328 | Yangoru and Kubalia | West Coast Mining Limited (100.00%) | 2014-06-11 |
| EL 2332 | Port Moresby, Boera | Koori No.9 Limited (100.00%) | 2014-07-16 |
| EL 2342 | Aiyura | Parubco Resources Limited (100.00%) | 2014-09-11 |
| EL 2343 | Telefomin | Min Metals Limited (100.00%) | 2014-09-15 |
| EL 2344 | Busulmin | Min Metals Limited (100.00%) | 2014-09-15 |
| EL 2346 | Okapa | Min Metals Limited (100.00%) | 2014-09-15 |
| EL 2347 | | Appolo Exploration and Mining Limited (100.00%) | 2014-09-19 |
| EL 2348 | Andewa | Frontier Copper (PNG) Limited (100.00%) | 2014-10-02 |
| EL 2349 | Hukim/Ningerum | Aus PNGMining Limited (100.00%) | 2014-10-15 |
| EL 2351 | Kandep | Tunduka Resources Limited (100.00%) | 2014-11-07 |
| EL 2355 | Wau | Hamdei Mines Ltd (100.00%) | 2015-02-02 |
| EL 2356 | Muller Range | Frontier Copper (PNG) Limited (100.00%) | 2015-02-03 |
| EL 2357 | Dumpu | MB Transport Limited (100.00%) | 2015-02-09 |
| EL 2359 | Vanimo and Wutung Govt Stns | Oenake Nickel Limited (100.00%) | 2015-02-13 |
| EL 2360 | Ioma Patrol | Luxembourg Investments Limited (100.00%) | 2015-02-13 |
| EL 2361 | Bundi Patrol | Luxembourg Investments Limited (100.00%) | 2015-02-13 |
| EL 2363 | Hotmin & Idam | Niuminco (ND) Limited (100.00%) | 2015-02-17 |
| EL 2364 | Hotmin, Wameimin & Siklaisia | Niuminco (ND) Limited (100.00%) | 2015-02-17 |
| EL 2365 | Ama & Idam | Niuminco (ND) Limited (100.00%) | 2015-02-17 |
| EL 2366 | Subutuya | Solway Group Mining (PNG) Limited (100.00%) | 2015-02-18 |
| EL 2367 | Sebutuya | Solway Group Mining (PNG) Limited (100.00%) | 2015-02-18 |
| EL 2369 | Ialibu Goverment Station | Algo Metals Limited (100.00%) | 2015-02-19 |

| EL 2371 | Wau | New Leaf Development Limited (100.00%) | 2015-03-03 |
|---------|-------------------------|--|------------|
| EL 2372 | Green River Station | Telemu No.92 Limited (100.00%) | 2015-03-05 |
| EL 2375 | Ala River | Frontrunner Exploration PNGLtd (100.00%) | 2015-03-16 |
| EL 2376 | Basamuk | MCC Ramu NiCo Limited (100.00%) | 2015-03-31 |
| EL 2377 | Aiome Govt. Station | Tribal Explorations Limited (100.00%) | 2015-04-02 |
| EL 2378 | Lorengau | Finny Limited (100.00%) | 2015-04-09 |
| EL 2380 | Amazon Bay | Boomine Investment and Development Company Limited (100.00%) | 2015-05-09 |
| EL 2381 | Mt. Lamington | Benshill Corporation Limited (100.00%) | 2015-05-21 |
| EL 2382 | Safia | Benshill Corporation Limited (100.00%) | 2015-05-21 |
| EL 2383 | Safia Station | Benshill Corporation Limited (100.00%) | 2015-05-21 |
| EL 2384 | Gerepo | Solway Group Mining (PNG) Limited (100.00%) | 2015-05-28 |
| EL 2385 | Ononge/Sigufe | Eda Minerals Limited (100.00%) | 2015-06-02 |
| EL 2386 | Kuabini | Harmony Gold (PNG) Exploration Limited (100.00%) | 2015-06-03 |
| EL 2387 | Mt Daum | Algo Metals Limited (100.00%) | 2015-06-04 |
| EL 2388 | Chuave Station | Kair Engineering Limited (100.00%) | 2015-06-10 |
| EL 2389 | Minj Town | Kair Engineering Limited (100.00%) | 2015-06-10 |
| EL 2390 | | Finny Limited (100.00%) | 2015-06-26 |
| EL 2391 | Doma Village | Papuan Minerals Limited (100.00%) | 2015-07-01 |
| EL 2392 | Port Moresby | Dansar Mining Limited (100.00%) | 2015-07-20 |
| EL 2393 | Ioma | Cheroh Mining PNGLimited (100.00%) | 2015-07-28 |
| EL 2394 | Mussau Island | Cheroh Mining PNGLimited (100.00%) | 2015-07-28 |
| EL 2395 | Lou Island | Cheroh Mining PNGLimited (100.00%) | 2015-07-28 |
| EL 2396 | Manus | Cheroh Mining PNGLimited (100.00%) | 2015-07-28 |
| EL 2397 | Kubuna | Cheroh Mining PNGLimited (100.00%) | 2015-07-28 |
| EL 2398 | Siassi Island | Cheroh Mining PNGLimited (100.00%) | 2015-07-28 |
| EL 2399 | Panaeati Island | Cheroh Mining PNGLimited (100.00%) | 2015-07-28 |
| EL 2400 | Namatanai | Cheroh Mining PNGLimited (100.00%) | 2015-07-28 |
| EL 2401 | Amanab | El Dorado Mining and Energy Limited (100.00%) | 2015-08-04 |
| EL 2402 | Garaina Station | Morobe Minerals & Metals Company Limited (100.00%) | 2015-09-02 |
| EL 2403 | Mt Lawson | Morobe Minerals & Metals Company Limited (100.00%) | 2015-09-02 |
| EL 2404 | Yonki | Yonki Holdings Limited (100.00%) | 2015-09-07 |
| EL 2405 | Kupiano | Kavra Maah Limited (100.00%) | 2015-09-21 |
| EL 2406 | Kimbe | GMG Global Mining Group Limited (100.00%) | 2015-09-30 |
| EL 2407 | Takis Village | Ballygowan Limited (100.00%) | 2015-10-01 |
| EL 2408 | Sikut Goverment Station | Ballygowan Limited (100.00%) | 2015-10-01 |
| EL 2409 | Roku/Ulpuna | Sagittarius Mining Limited (100.00%) | 2015-10-02 |
| EL 2410 | Sogeri Plateau | Cheroh Mining PNGLimited (100.00%) | 2015-10-07 |
| EL 2411 | Namatanai | Cheroh Mining PNGLimited (100.00%) | 2015-10-08 |
| EL 2412 | Kavieng | Cheroh Mining PNGLimited (100.00%) | 2015-10-08 |
| EL 2413 | Leron Plains | Rio Tinto Exploration (PNG) Limited (100.00%) | 2015-10-09 |
| EL 2414 | Nutuve Station | Ballygowan Limited (100.00%) | 2015-10-13 |
| EL 2415 | Maprik | West Coast Mining Limited (100.00%) | 2015-10-14 |
| EL 2416 | Upper Yandera | Cheroh Mining PNGLimited (100.00%) | 2015-10-14 |

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| 11 | SB 54-4 | Ambunti | |
| 13 | SA 54-12 | Kutubu | |
| 16, 23 | SC 54-8, SC 55-5 | Daru-Maer | |
| 18 | SA 55-13 | Sepik | |
| 19 | SB 55-1 | Bogia | |
| 20 | SB 55-5 | Ramu | |
| 21 | SB 55-9 | Karimui | |
| 22 | SB 55-13 | Kikori (no explanatory notes) | |
| 24, 25 | SA 55-10, SA 55-11 | Admiralty Islands | |
| 26 | SB 55-2 | Karkar | |
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