

# **NEW GUINEA GOLD CORPORATION**

**Macmin (PNG) Ltd (90%)  
& Gold Mines of Niugini Holdings Ltd (10%) Joint Venture**

MACMIN (PNG) LTD IS A  
WHOLLY OWNED SUBSIDIARY of  
NEW GUINEA GOLD CORPORATION.  
GOLD MINES OF NIUGINI HOLDINGS LTD  
is a PNG COMPANY OWNED APPROX. 24% by the  
BAINING LANDOWNERS

## **PROPOSAL FOR DEVELOPMENT**

**of**

## **SINIVIT GOLD PROJECT East New Britain Province**

**Submitted to – Department of Mining Papua New Guinea August 2004**

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## **1. INTRODUCTION**

New Guinea Gold Corporation's (NGG's) business plan, based on present mineral resources, is to develop three mines over the next three years. These mines should yield 40,000 ozs gold per annum for four to five years. Cash flow from these mine will fund further exploration on these projects to define additional and new resources and thus extend mine life or allow an increase in production rate.

**It is most important to note that none of the proposed mine projects have been fully explored.** All three mine projects could yield much larger and longer life mines than are presently proposed. The resources defined to date, and considered for mining, come from relatively small parts of large mineralized systems.

The Sinivit mine is intended to be the first of three mines. The remaining two mines are the proposed Imwauna Mine (Normanby Property), and the Weioko Mine (Sehulea Property), and should be in production in 2006 and 2007 respectively. An original Feasibility Study was completed for Sinivit in 1997 by external consultants Ausenco Limited. This feasibility envisaged gold extraction over a three year period by a 100,000 tonne per annum CIP Plant. Development did not proceed on the basis of this feasibility because of lower gold prices in the late 1990's.

**A review of the project, which minimizes and reduces the mining / processing period and changes the processing from CIP to non reusable vats has significantly improved the economics of the project and has produced a positive feasibility.**

New Guinea Gold Corporation (NGG) has interests in twelve projects in Papua New Guinea. Four projects are considered core projects, on which NGG's funds are focused. Three of the core projects (Sinivit, Normanby and Sehulea) are partly drilled, have modest resources and / or reserves and are considered to have untested potential which could yield major gold ore bodies (plus 1 million ozs contained gold). The fourth core project (Mt Penck-NGG beneficial interest 60%, Vangold Resources beneficial interest 40%) has extensive surface indications of gold in soils and trenches and is scheduled for initial drill testing in June 2004.

The remaining eight projects are all significant projects with major orebody potential as determined from extensive exploration completed to date. Two projects have been joint ventured to third parties who are sole funding exploration. NGG considered joint venturing appropriate for the projects even though they have significant gold in drill holes and potential in excess of five million contained ozs of gold, because both projects require multi million dollar expenditures to proceed them to the next phase of evaluation.

Four properties are held jointly with Vangold Resources and expenditures are presently shared 50/50.

Two projects with significant copper potential, Simuku and Mt. Nakru are being explored by NGG and NGG / Vangold respectively.

NGG operates in PNG through its wholly owned subsidiary Macmin (PNG) Limited (a PNG private company which holds title to the properties).

The revised feasibility was carried out 'In House' by NGG and Macmin Silver Limited under the supervision of R McNeil, a qualified person and Fellow of the Australian Institute of Mining and Metallurgy. Independent studies were completed on the mine plan by Colin Wregg, Consultant Mining Engineer, a qualified person and Fellow of the Australian Institute of Mining and Metallurgy and metallurgical testwork by staff of the metallurgical consulting firm, AMMTEC Limited of Perth, Western Australia.

## 2. SUMMARY

The Sinivit project is a joint venture between Macmin (PNG) Ltd and Gold Mines of Niugini Holdings Ltd (GMNH), with Macmin (PNG) Ltd as operator. Macmin (PNG) Ltd holds a 90% equity and GMNH 10% equity in the project. In addition Macmin (PNG) Ltd holds approximately 20% equity in GMNH the local Baining landowners hold approximately 24% equity in GMNH. Macmin (PNG) Ltd is a wholly owned subsidiary of New Guinea Gold Corporation a public company listed on the Toronto Venture Exchange, Canada.

**The main points / conclusions of the Development Proposal based on the initial oxide ore reserve are as follows:**

• Oxide Reserves	306400 tonnes @ 5.31 g/t gold
• Oxide Resource	511,900 tonnes @ 4.32 g/t gold
• Sulphide resource	218,300 tonnes @ 9.46 g/t gold
• Mine Plan, based on Oxide Reserves only	306450 tonnes ore mined 600600 tonnes waste mined
• Mine Period	15 months
• Ore Process	Vat Leach
• Process Period	24 to 30 months
• Recovery by	Carbon Columns
• Carbon Stripping	Atmospheric Zadra elution
• Gold production	46,044 ozs
• Gold recovery	88 %
• Operating Cost	AUD \$24/t of ore
• Capital Cost	AUD \$6.2 million
• Cash cost (before tax/royalty/ cost of capital)	AUD \$168/oz gold
• Cash flow (before tax/royalty/cost of capital)	AUD \$17.5 million
• Project net cash flow	AUD \$8.85 million
• Gold Price	AUD \$548 (about US\$385)

Note – all figures in this study are \$AUD unless otherwise specified.

**The project has considerable upside and mining is expected to continue for at least three years or longer subject to the following points:**

- An additional 12,000 to 30,000 ozs Au may be added to reserves from presently defined oxide resources.
- Additional oxide resources may be located.
- The existing higher grade telluride/gold resource of approximately 70,000 ozs Au may be

marketable as a concentrate. This resource may be increased with further drilling.

- An exploration concept has been developed which, if proven to be factual, could locate a multimillion ounce telluride/gold orebody and extend mine life by an unknown period.

### 3. DESCRIPTION OF PROJECT

The Mt Sinivit project contains a gold reserve and resource. In addition to the known reserve and resource the tenements have excellent potential to host additional multi-million ounce gold resources.

The project is situated south of Rabaul in East New Britain, Papua New Guinea.

The project is connected by road to Kokopo and Rabaul.

The resources include both oxide gold and telluride/gold resources. This development proposal plans to mine the oxide reserves only but studies suggest that it may also be economic to mine additional oxide resources and the telluride/gold resources, subsequent to completion of the mining of the oxide reserves. Cash flow from the initial mine will be used to convert oxide resources to additional reserves, drill out further resources and to complete a study re the viability of mining the telluride/gold resource.

The gold mineralisation was discovered in 1983 by Esso and since that time in excess of \$10 M has been spent on exploration and development studies.

Previous explorers, all major companies, have considered the resource too small to meet internal development guidelines. However, the feasibility study completed by Macmin (PNG) Ltd indicates that the oxide reserve can be profitably extracted (at present Australian dollar gold prices).

NGG has other gold resources or potential to define gold resources in Papua New Guinea and plans to develop the Wild Dog deposit sequentially with these additional resources, such as those occurring within the Normanby tenement. Such sequential development will allow significant cost savings and this will increase the profitability of mining both the Mt Sinivit and Normanby reserves/resources.

Subject to financing and receipt of government approval, the Mt Sinivit deposit could be producing by June 2005. Cash flow analysis of the base scenario suggests that an IRR of 102% and a surplus after tax over the life of the mine of \$8,057,140. NPV at 9% discount rate is \$6 million.

### 4. TENEMENTS

Type	Date of Application	Date of Grant	Area sq.kms
Mining Lease 122	9/11/94	February 1996 Under renewal	3.55
Mining Easement 70	9/11/94	February 1996 Under renewal	0.41
Exploration Licence 1140		May 1995 Current	44.2

## 5. RESERVE / RESOURCE

The reserve on which the feasibility study is based was calculated specifically for the study by Australian Mine Design and Development Pty Limited (AMD). Their calculations are shown below as the oxide Mining Reserve.

The resource estimates shown below were calculated by Curtis and Lindley.

The oxide Mining Reserve is included within the oxide Resource. It is expected that further evaluation of the oxide Resource will result in a large part of the oxide Resource, which is at present not included in the oxide Reserve, being added to the oxide Reserve.

The sulphide resource requires additional study to determine whether or not this gold can be economically extracted.

Type of Reserve/Resource	Tonnes	Grade g/t Au	Au/ozs
Oxide Mining Reserve	306,400	5.31 (uncut)	52300
Total Oxide Resource	511,900	4.32	71100
Total Sulphide Resource	218,300	9.46	66,400
<b>TOTAL RESOURCE</b>	<b>810,200</b>	<b>5.05</b>	<b>131,700</b>

A total of 9975 metres of drilling have been completed in and around the Wild Dog deposit.

No Holes	Type of Drilling	Metres	Drilled by
71	Diamond/Core	12,790	Esso/City Resources
40	R. C. Percussion	1,833	Esso/City Resources
51	Diamond	4,985	Highlands Gold
22	R.C.Roller	767	GMNH
184	<b>TOTAL</b>	<b>8,875</b>	

The resource calculations used results from 59 drill holes. The reserve calculation used results from 36 holes and surface trenches.

## 6. MINING

The initial mine plan at Sinivit envisages three small open pits mining a total of 117,413 bcm of ore, 324873 bcm of waste over a 15 month period. Initially 60790 bcm of waste material will be removed and used to form up roads and to commence the vat wall construction. It is expected that at the completion of these pits further gold will be recovered from oxide Resources at nearby

Kavursuki which are not presently included in the Reserve. The waste to ore strip ratio is expected to be 1.96 : 1.

In addition there are further resources of oxide gold totaling approximately 20,000 ozs. It is estimated that 50% of this gold may ultimately be mined adding further to the mine life.

## **7. METALLURGICAL TESTWORK**

There are two distinct ore types - oxide and sulphide. The present development plan envisages the development and extraction of the oxide resource.

### **7.1 Oxidised ore**

Metallurgical testwork on the Wild Dog oxide deposits has been undertaken by a number of groups including City Resources, Warman Laboratories, Ed Newman & Associates and the Julius Kruttschmitt Research Centre. Ed Newman & Associates prepared a review of testwork in July 1994. The gold mineralogy of the oxidised ore is not clear, but cyanide leach liquor assays contain low levels of tellurium, arsenic and copper, suggesting extensive oxidation and remobilisation of gold into leachable forms.

Bond Work Index determinations were completed on oxide ore samples indicating an index of 11.2 KWh/tonne which is low for quartz type materials. The ore is indicated to be composed of many fracture planes.

Column leach testwork carried out in 2003 - 2004 by Macmin and AMMTEC have indicated that material crushed to minus 12.5 mm is leachable in cyanide. Recoveries up to 92 % were obtained with cyanide consumptions of 0.65 kg/t. Ammtec's figure of 88% has been adopted in the financial study. This has indicated that vat or heap leaching is a viable option for recovery of gold from the oxide material.

### **7.2 Sulphide Mineralisation**

Data suggests that gold in sulphide ore is mainly present as gold telluride which is refractory to cyanide leaching. There is sufficient sulphide ore testwork available, however, to show that a flowsheet involving a simple flotation scheme, in a low cost flotation cell such as the Jameson cell, followed by shipment to Mt Isa (or other smelter) for treatment in the copper Isasmelt vessel would be feasible. There would be some penalty for tellurium (600-700g/tonne in the concentrate) and low copper, but the gold values would offset this. The presence of an existing infrastructure to mine the oxidized ore, should make this option feasible.

## **8. PROCESS DESCRIPTION**

The feasibility study is based on the use of Vat Leach technology.

Vat Leaching is the alternative to heap leaching in an environment of high rainfall where excessive dilution of leachate can occur because of the large area exposed on the heap. Vat leaching consists of constructing a vat structure into which crushed or ground and agglomerated ore is placed. The vats are lined with high density polyethylene liners to prevent loss of leachate and can be covered to prevent ingress of water from rainfall events.

Leachate solution is pumped into the vat through a series of pipes or channels in the base until the ore is completely saturated. After passing through the ore the leachate is drawn off through the same pipework and passed into carbon columns where the precious metals are adsorbed on to activated carbon. The carbon is then eluted with a stronger cyanide solution. The eluate is electro won to produce a product for smelting into bullion.

Vats will be constructed at sites previously approved for tailings dams, within exhausted pits (the

northern oxide pit will be moved first), or at other suitable sites. This vat leach process does not generate tailings, but fragmented rock crushed to -15 mm size fractions, removing any chance of tailings dam failure. Vats will be neutralized and re-vegetated on completion of processing, within old open pits or other suitable areas.

## 9. FINANCIAL SUMMARY

Financial analysis on the project was completed by MACMIN.

Cost of capital has not been included.

MACMIN's preferred or base case (Table 1) has the following assumptions:

- Capital Cost \$6,200,000
- Operating Cost \$ 24.08
- Gold Price AUD \$ 548.00
- Recovery 88 %
- Residual value of moveable plant Mine Life \$ 850,000
- Depreciation To depreciate plant over 1.5 year mine life

Sensitivities on the MACMIN base case include:

	<u>IRR%</u>	<b>NPV @ 9% \$AUD</b>
• Base case	102	6,077,487
• Capital cost minus 10%	77	6,506,622
• Operating cost minus 10%	111	6,506,622
• Gold price minus 10%	77	4,628,972
• Recovery minus 10%	77	4,628,972

Cash flow analysis for the base scenario is shown in Table 1.

This analysis indicates a project IRR of 102%, NPV of \$6,077,487.00 at a discount rate of 9% and net cash flow after tax of \$8,057,140.00. Cash cost/oz gold produced is AUD \$168. In addition the plant is expected to have a significant residual value. Project cash flow before tax, royalty and repayment of capital is approximately \$17.5M. The gold price used is equivalent to \$AUD548. Because of fluctuating exchange rates it is inaccurate to use the US\$ gold price. Most costs are incurred in \$AUD or PNG Kina. The AUD\$ gold price on August 5<sup>th</sup> was AUD \$560.00.

**Mt Sinivit Project Cashflow**

Table 1

**CASH FLOW MODEL BASE**

1.5 YEAR Mining 1 year Processing 1.5 years

		TOTAL FOR PROJECT		YEAR 1	YEAR 2	YEAR 3	
OXIDE ORE MINED	TONNES	306448			306448		
GRADE OF ORE (GRAMS PER TONNE)					5.31		
GOLD PRODUCTION	OUNCES	46044			34533	11511	0 75% Production during mining phase
							25% from continuing vat leaching
		AUD	\$'000	AUD	\$'000	AUD	\$'000
REVENUE FROM GOLD PRODUCTION		25230		18922		6307	0
CAPITAL COSTS			-6200				850
OPERATING COSTS		-7750		-7355		-395	0
DEPRECIATION		-6200		-3567		-2633	
ROYALTY & LEVY 2% + 1.9% ON GOLD		-984		-738		-246	0
TAXABLE INCOME		10296	-6200	7263		3033	850
LESS TAX PAYMENT 30% (tax adjusted for royalty treatment)		-3089				-2179	-910
SURPLUS AFTER TAX PMT.		7207	-6200	7263		854	-60
ADD BACK DEPRECIATION				3567		2633	0
CASH FLOW FROM THE PROJECT		8057	-6200	10829		3488	-60

RETURN ON PROJECT		
INTERNAL RATE OF RETURN =		102%
NET PRESENT VALUE @ 6%	\$6,669,920	
NET PRESENT VALUE @ 9%	\$6,077,487	
NET PRESENT VALUE @ 12%	\$5,541,793	

**ASSUMPTIONS**

METALLURGICAL RECOVERY		88%
CONVERSION RATE - GRAMS TO OUNCES		31.10
GOLD PRICE (\$US)	\$	400.00
CONVERSION RATES	\$AUD	1.00
	= KINA	2.38
	= \$US	0.73
OPERATING COSTS	\$AUD	24.00 PER TONNE
DEPRECIATION CALCULATED TO WRITE OFF PLANT OVER		1.50 YEARS
TOTAL CAPITAL COSTS TO BE INCURRED IN YEAR 1	=	6,200,000
ASSUMED RESIDUAL VALUE AFTER 1.5 YEARS	=	850,000 (OF MOVEABLE PLANT)
Gold Grade		Uncut average for the reserve

**10. ENVIRONMENTAL STUDIES**

Approval of the Environmental Plan for ML 122 was granted, subject to conditions, by the Minister for Environment and Conservation on 29<sup>th</sup> January 1996.

Subsequent to this plan further botanical, avifauna, forestry and baseline water quality studies have been carried out.

In December 2003 the Secretary, Department of Environment and Conservation was informed of the Joint venture's intention to proceed with the development of Mt Sinivit and consequently Douglas Environmental Services of Port Moresby was commissioned to prepare a Environmental Management and Monitoring Plan addressing the conditions of the granted EP and reflecting changes in legislation brought about by the introduction of the Environment Act 2004.

The Environmental Management & Monitoring Plan was submitted to the Department of Environment in May 2004.

## 11. LANDOWNER RELATIONS

The local Baining landowners are very supportive of the Project and are significant shareholders in GMNH.

### 11.1 Memorandum of Agreement

Agreement has been reached on the terms of a Memorandum of Agreement (MOA) relating to the Mt Sinivit project between the Independent State of Papua New Guinea, East New Britain Provincial Government, the Uramot Company Limited (representing the landowners) and GMNH.

This agreement, amongst other things, determines the royalty split between the landowners and the provincial government. The present MOA provides for 100% of royalties to be paid to the landowners, with the East New Britain Provincial Government waiving their entitlement providing gross production does not exceed 20,000 ounces of gold per annum. Half of this money will be paid as cash to the Uramot Company and the balance will be paid to the Sinivit Government of communities to be spent on projects agreed to by the council and the provincial government.

The agreement was signed on 3<sup>rd</sup> January 1996.

### 11.2 Compensation Agreement

Following five months of negotiation, agreement with landowners on a proposed Compensation Agreement for the Mt Sinivit project was reached on 22 March 1994. The agreement was executed on 27 April 1994, and was subsequently registered by the Mining Registrar of the Department of Mining & Petroleum on 5 May 1994. This agreement establishes a schedule of compensation and annual payments applicable to land and plants damaged, destroyed and/or occupied during mining activities within Mining Lease 122 and Mining Easement 70.

**Compensation has been paid annually since 1995.**

## 12. RESOURCE POTENTIAL

Dr I. D. Lindley has developed a conceptual model which envisages that the known Wild Dog mineralisation could be indicative of a multi-million ounce telluride/gold resource. This resource would occur in structures which intersect the Wild Dog structure known as the Wild Dog Gunsap Mountain Jog, and in parallel structures such as the Gunsap Mountain Structure. Drill testing of this concept is still to be carried out.

**Driving fault structures:** The Wild Dog and Gunsap Mountain driving faults are typically filled with weakly mineralised low sulphidation veining and silicification. Potential exists for high sulphidation gold-copper mineralisation of the Wild Dog type in those portions of the Wild Dog and Gunsap Mountain Structures adjacent to the dilational jog. These areas are undissected and like the jog, remain masked by hydrothermal clays up to 60m thick.

Gold-rich porphyry copper. The limited areal development of alteration patterns in the Magiabe Valley intrusive suggests that the system is in the early stages of being unroofed. Disseminated chalcopyrite/bornite is present in propylitized wallrocks to the intrusive and disseminated chalcopyrite is present in potassically altered intrusive in Magiabe Creek. The intrusive is magnetite rich, with up to 7% noted in petrology samples indicative of a sulphur under-saturated parent magma. An intensely phyllic altered pebble breccia body in Vream Creek may be a good target for high-grade disseminated gold-silver mineralisation.

### **Oxidised Ore**

The potential for oxide ore is relatively limited and is not likely to exceed 50,000/100,000 ozs

### **Sulphide Ore**

**Dilational jog structure:** The passage of the metal-rich liquids along pre-existing structures

utilised by the low sulphidation system suggests that the dilational jog may be of considerable economic interest. The structure has a 1.5km strike and is capped by a comparatively wide 600m zone of hydrothermal clay. During 1:2,500 scale mapping float of crustiform vuggy silica and possibly residual vuggy silica was noted in creeks draining the jog. Ridgeline soil sampling was completed over the jog in 1984 defining a 700m x 100-200m copper-gold-arsenic soil anomaly, suggestive of high sulphidation style mineralisation at depth. No other fieldwork has been completed and the structure remains undrilled along its entire length. The structure is highly prospective for a Martha Hill type deposit with a likely overprint of high sulphidation Wild Dog type gold-copper mineralization.

### **13.FINANCING**

NGG proposes to finance the Project by way of equity funding.

Canaccord Capital Corporation, Vancouver Canada have acted as agent to NGG in its last two rounds of equity funding.

Canaccord remains supportive of NGG (see copy of letter sent to the Secretary) and has agreed to raise the necessary finance in North America and Europe **in late September 2004.**

**Compiled by: R.D.McNeil**  
**5/8/04**