

# **Morobe Consolidated Goldfields Limited**

## **Morobe Gold and Silver Project**

### **Socio-Economic Impact Study**

- **Volume I**      **Introduction, analysis of social and political risks, recommendations**
- Volume II**      **Area study and social mapping**
- Volume III**     **Working Papers**

**March 2001**

proof corrections 9 May 2001

document format remediated in Word 2007, 22 August 2010

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## EXECUTIVE SUMMARY

- This study characterises the stakeholder environment in the hinterland of the Morobe Gold and Silver Project. Its key objectives are to identify areas of risk in the inter-stakeholder relationships and to provide the means of ensuring equity in the distribution of mine-related benefits.
- On present design, the project will be a small to medium sized operation, compared with the larger contemporary mining and petroleum operations in Papua New Guinea. Partly as a consideration of the project's size, this report deals only in passing with the project's macroeconomic contributions to Papua New Guinea, useful though they may be, instead looking much more closely at its effects within the District it is situated in, one of 89 in the country.
- This emphasis is also helpful in focussing on the key social and political risks of the project at a time in the development of Papua New Guinea when contemporary political process has seen renewed efforts to de-centralise many of the planning and implementation functions of government to District level.
- The primary project impact area comprises the parts of the Bulolo District where the project's principal Biangai (50%) and Watut (50%) landowners live and which contains the historical mining towns of Wau and Bulolo, established in the 1920s when the area was opened up to Australia prospectors after the First World War.
- This is the first SML (Special Mining Lease) based project in the country to be proposed for an area that is not 'remote'; that is, with little existing infrastructure, distant from towns and with a limited pool of potential employees with any formal work experience.
- The project will complement existing mining, timber and pastoral operations in the area which have provided employment to a diverse mix of people, drawn from both the customary owners and many other parts of mainland Papua New Guinea, for the last 75 years.
- The project will be able to make use of a highway already sealed from the ocean port of Lae as far as Bulolo, draw on the graduates of the twenty-four primary, three secondary and vocational, and one university level educational institutions in the District for employment, use its two airfields, and accommodate its workforce in and adjacent to existing urban land. The project's key social and political risks are related (a) to the special history of Wau and Bulolo and (b) cultural and social organisational factors that have acted to constrain development among the Biangai and Watut people in the past.
- In relation to their history, both the Biangai and Watut peoples feel dispossessed by colonial era land acquisitions that made mining and the establishment of their two

towns possible, and which created wealth that helped build the rest of New Guinea up to the end of the 1960s, but which gave due recognition to them only belatedly.

- This is accompanied by a feeling of neglect by post-Independence governments as the focus of development and urbanisation has shifted into the highland interior of Papua New Guinea and out to the coastal towns of Moresby, Madang and Lae—the latter once merely a service centre for Wau.
- In relation to their culture and social organisation, both groups—in common with everywhere else in Papua New Guinea—have special characteristics that allow the rapid uptake of certain aspects of development but act to inhibit others. An important issue is how ‘safe’ decision-making can be made in the context of societies where leaders are not given a customary mandate to speak for their communities on matters which are essentially handled at family level.
- The short mine life of ten years is identified as a critical negative impact of the project; the main reason is that many landowner ventures (like small businesses everywhere) will inevitably fail at the first attempt, and a short mine life will allow few second chances. Similarly, a short mine life means that local area employees will have ‘jobs’, but not ‘careers’ at the project.
- When project design details are more advanced in relation to procurement and the demand for locally-sourced services, a Business Development Plan will be prepared as a separate document.
- A Mining Development Forum will be the venue at which stakeholders will meet to negotiate and finalise those parts of the mining agreements that relate to stakeholder benefits and obligations to one another during the project life. (This follows from government requirements for the issuing of a Special Mining Lease in Papua New Guinea.)
- Balance among the benefit streams that accrue at an SML mining project—lease payments and compensation, royalty, employment, small business opportunities, provincial funding arrangements, equity provisions—is identified as being more important than their absolute scale, though this should be in line with contemporary industry practice. This study recommends that the participants at the Mining Development Forum adopt the primary goal of achieving overall balance, taking into account their different methods of quantification and delivery, in the overall package of benefits.
- One-off compensation for clearance of the high bush during construction will deliver large amounts of cash for a short time; in view of difficulties experienced elsewhere this study recommends a financial model be prepared in order to negotiate a village development package at the Development Forum using this money as a common property benefit. A village housing scheme is identified as the most appropriate objective.
- Mortality rates in the rural hinterland of the project are among the highest in the country. The company has been involved in health assistance to villages for ten years; it may wish undertake to extend its involvement at the Development Forum.

However, if doing so, undertakings should be sought detailing the responsibilities of government, including for the facilitation and endorsement of donor assistance in the area of health.

- Social and political risks are identified in several areas. These are divided into three parts: in the local political process, relating to the project design, and relating to the environment.
- The local political process: Wau and Bulolo are not noted for competitive, resource-consuming politics—indeed have suffered in the past because of the invisibility of local political issues on the stage of national politics. However, the whole area is vulnerable instead to intrigues and dealings over alienated land, whose history dates back to acquisitions by the Administration in the 1932-41 period, and litigation over the ownership of leases on non-alienated land, including mining tenements.
- The part of EL677 designated in 1987 in the Provincial Land Court as being an ‘Area of Common Interest’ between Kwembu, Winima and Nauti villages, and where the Hidden Valley ore body is situated, is considered to be under secure ownership. The likelihood of legal challenge is considered to be low.
- Other parts of EL677 where exploration activity has taken place have not been the subject of specific legal cases. Compensation sharing arrangements have been subject to understandings only among Kwembu and Winima families. These understandings are not secure but concern only the members of the two villages, who are close relatives. The likelihood of legal challenge from other places is considered to be very low.
- The part of EL497 where the Hamata prospect is situated, and subject to a determination of ownership in the Local Land Court in 1992, is *not* considered to be under secure ownership: (a) several parties, whose witness statements in earlier cases show at least that their cases need to be heard, were excluded from the court for procedural reasons which do not now exist, and (b) evidence presented in the court contains flaws overlooked by the magistrate but which are now apparent. The likelihood of a legal challenge being successful is considered to be high, but concerns land more than 5km from the proposed SML.
- The remaining parts of EL497, including areas that may be needed for waste dumps adjacent to the Hidden Valley SML, is considered to be under contestable ownership. The Local Land Court case over Hamata, which was taken by the two previous tenement holders to also cover land between it and Hidden Valley, actually refers to the land immediately around Hamata. The likelihood of litigation everywhere else is considered to be high.
- Relating to the project design (on current plans): the acquisition of land for the project will not cause land shortage near to human settlement; the relocation of communities is not required; the mill and main industrial facilities will not cause a nuisance near to human settlements. The construction of the mine will consume some natural resources (mid-montane forest with *Nothofagus* and conifers) that villagers could otherwise make economic use of, but the remote location of the facilities in relation to existing means of access is a mitigating factor.

- On the other hand, the planned access route through Edie Creek, and any camp accommodation in the Edie Creek-Bulldog Track area, will involve far more contact with the settler communities of alluvial miners there than has been the case during exploration. There is potential for conflict and the Liaison Department will need adequate resources to ensure that this does not happen.
- Relating to physical impacts on the the environment: Melanesian concepts of pollution differ significantly from Western ones and connect into local political action in different ways; conventional measurements of environmental performance and company responses to mitigate, for example, dirty water discharge will have to be accompanied by consultation and awareness programmes more closely tailored to local modes of thinking.
- In relation to project generated indirect impacts on the environment, when mine infrastructure is created in the Edie Creek-Bulldog Track area, past experience shows that alluvial miners and some landowners will respond by creating new residential hamlets in nearby locations. Previously unused forest will be opened up for subsistence gardening and this should be taken into account when looking at the overall physical impact of the project.
- Alternative water supplies are required for downstream communities where there is a *perception* that river water will be impacted by run-off during construction or by mining and waste storage in the headwaters.
- Landowners and downstream communities will demand discussion about many aspects of pollution and environmental failure, topics that have become familiar to them in the media in recent years. The EP will cover the content of community consultation; here it is pointed out that its motivation is to reduce the social and political risks associated with breakdowns of communication.
- Proposals for the monitoring of social impacts from the start of project go-ahead will be developed in conjunction with the Environmental Management and Monitoring Plan. Key issues in social monitoring will be:
  - Evaluations of the spread of benefits across the range of primary and secondary stakeholders resident in the Project area.
  - Evaluations of the spread of benefits by type of benefit and across gender and age groups.
  - Evaluations of performance in the attainment of measurable social development objectives.

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## ABBREVIATIONS & DEFINITIONS

AGF	Australian Gold Fields. Purchased EL497 from RGC and EL677 from CRA in 1997, placing the two sets of prospects under one ownership. Went into administration in March 1998.
Agreements	When referred to in the text, the ‘project agreements’ will loosely mean any or all of the MOAs, permits, plans or agreements entered into in respect of the granting of a Special Mining Lease that relate to landowners, or the provincial and national governments (e.g. Forum MOAs, Compensation Agreement, Business Development Plan).
CRA	Conzinc Rio Tinto: CRA Minerals’ subsidiary Hidden Valley Gold held EL677 and ran the Wau office until the latter’s sale to AGF in 1997. (CRA was partnered by Placer Niugini 1991-1993.)
DEC	Department of Environment and Conservation. See Office of Environment and Conservation.
DOM	Department of Mining. Formerly ‘Mining and Natural Resources’ (1970s), ‘Minerals and Energy’ (1980s), ‘Mining and Petroleum’ (1990s), ‘Mineral Resources’ (1996-99). The principal variation is that a new department was created for ‘Petroleum Resources’ in 1996.
EL	Exploration Licence. Tenement granting exclusive geological exploration of an area to the holder.
EP	Environmental Plan. A submission to the OEC made up of socio-economic and biophysical environmental studies setting out what external effects a project is predicted to have. See EMMP.
EMMP	Environmental Management and Monitoring Plan. A submission to the OEC setting out how a project will measure, report and mitigate a project’s environmental effects.
Forum	Mining Development Forum. A formal round of negotiations between landowners, the provincial and national governments, and the company as a prerequisite to the granting of a Special Mining Lease. An outcome of the Forum will be MOAs detailing the obligations of each of the parties in respect of benefit streams, responsibility for infrastructure, mine monitoring, etc.
HVG	Hidden Valley Gold. Subsidiary of CRA Minerals at Wau until renamed to Morobe Consolidated Goldfields after sale to AGF in 1997.
IASER	Institute of Applied Social and Economic Research. Now re-named NRI, it was set up in the 1960s by the Australian National University as the New Guinea Research Unit.
ILG	Incorporated Land Group. Under the <i>Land Groups Incorporation Act</i> 1972, small clans or subclans can incorporate by providing a schedule of genealogy, a description of properties, a constitution, and list of office bearers. ILGs have been used in forestry and are the preferred means of identifying landowners at oil and gas projects.
Lanco	‘Landowner Company’—at oil and gas projects, umbrella groupings gathering together 20-50 ILGs.

LIR	Land Investigation Report. Document setting out the findings of a formal lands investigation. It should contain a map of land blocks and an attribution of ownership of each block to particular people or groups of people.
LMP	Lease for Mining Purposes. A special land lease issued by the State to a mining company for plant sites, waste dumps and accommodation areas not within an SML.
LLG	Local Level Government.
MCG	Morobe Consolidated Goldfields. New name for Hidden Valley Gold after its sale to AGF in 1997.
ML	Mining Lease. A lease issued by the State to a mining company for operations with capital start-up costs of less than US\$75m and fewer permitting requirements than an SML.
MOA	Memorandum of Agreement. A series of MOAs are the expected outcome of the Mining Development Forum (which see).
MPA	Morobe Provincial Administration. Prior to the OLPLLG reforms, this was the ‘provincial government’. Technically, this term is discontinued, there being a Provincial Assembly and LLGs, 23 in number, who presidents automatically sit in it. The Assembly has sectoral committees whose chairpersons are the equivalent of the former provincial ministers.
NGG	New Guinea Goldfields Ltd. Formed in 1929, it bought up significant lease areas at Koranga and Upper Edie in 1930. NGG operated the following mines: Edie Creek/Karuka Mine, Golden Ridges, Upper Ridges, Golden Peaks. NGG properties and operations passed to RGC in 1981.
NRI	National Research Institute. Formerly IASER, the primary government-funded social and economic research institution in PNG.
OEC	Office of Environment and Conservation. Administers the <i>Environmental Planning Act</i> 1978. Formerly the Department of Environment and Conservation.
OLPLLG	The <i>Organic Law on Provincial and Local Level Government</i> 1996, commonly referred to as ‘the reforms’. Among other things, the OLPLLG aligned district boundaries on those of the national ‘open’ electorates, abolished elected provincial governments, replaced the assembly members with the national MPs and the council presidents, and the Premier with a Governor drawn from the MPs subject to availability in an order of precedence. Planning and budgeting functions were handed to District Managers and their staff.
RGC	Renison Goldfields Consolidated. Took over NGG operations at Wau in 1981, closing its last operation, the Namie mine, in 1991. Held EL497, and explored the Hamata and Kerimenge prospects, until selling its Wau properties to AGF in 1997.
SEIS	Socio-Economic Impact Study (see also SIA).
SIA	Social Impact Assessment. New equivalent of SEIS in the <i>Environment Act</i> 2000.
SML	Special Mining Lease. A lease issued by the State to a mining company for operations with capital start-up costs greater than US\$75 million. An SML has relatively complex permitting requirements, including a Development Forum. Provinces with SML operators are entitled to extra grants from the National Government and special assistance with infrastructure costs (see SSG).

- SSG Special Support Grant. A grant paid to a province with a mine operating under SML regulations or a petroleum project at approximately 1% of its export value.
- TCS Tax Credit Scheme. This allows mine operators to undertake spending on approved civic projects and offset it against tax, to limit of 2% of their total liability.
- WWI The First World War, 1914-18, had only a tangential impact on the Bulolo District. Hermann Detzer, a German government official undertaking a border survey patrol in August 1914, was asked to surrender at Nepa on the Lakekamu Goldfield, but struck north, probably taking his men through the Aseki area on his way to the Langimar and Markham Valleys. No informants yet encountered have a knowledge of this (nor any other WWI events).
- WWII The Second World War, 1939-45 (1941-45 in the Pacific) had a heavy impact on the Bulolo District. The Battle of Wau, 14 January-9 February 1943, represents the last substantial forward movement by Japanese forces in the New Guinea theatre. Many Biangai men and all remaining pre-war goldfield labourers worked as war carriers or labourers in the construction of the Bulldog Road, but all other than casual carriers appear to have now died. Wandumi village was destroyed but informants say no Biangai was killed or injured.

## WAU TIMELINE

Sources: Clune 1951, Lowenstein 1982, Sinclair 1999; other refs in bibliography; own research.

- 1895** Expedition of Ehlers & Piering from Francisco River to Lakekamu River via Kuper Range.
- 1906** Gold rush to Upper Waria.
- 1907-08** 3000 oz. of gold won by alluvial miners on Upper Waria field.
- 1909** W. Dammköhler & R. Oldorp ascend Watut, attacked south of present Wafi prospect by Middle Watut people.
- 1910** Gold prospector Arthur Darling ascends Watut possibly as far as Bulolo Valley with party of Orokaivas. Expedition attacked by 'Kukukukus', several fatalities and all belongings lost on return journey by raft.  
Lutherans establish station at Lae.
- 1911** Gold rush to Upper Lakekamu field (A. Darling and William Park among miners).  
German patrol to Snake River, patrol fights with Buang.
- 1912** Prospecting expedition to Middle Watut by Crowe, Preston, Auerbach & Park.
- 1913** 1st Lutheran expedition: Georg Pilhofer & Leonhardt Flierl from Waria River to Markham via Bulolo and Watut Rivers. Pilhofer's map shows route through Biangai territory.  
Germans establish small administrative station at Lae.
- 1914** Escape of German border survey patrol led by Hermann Detzner from Papuan border to Markham via Aseki and Langimar Valley at the outbreak of WWI.
- 1916** 2nd Lutheran expedition: G. Pilhofer & F. Bayer from Francisco River to Upper Waria and return via Upper Bulolo to Markham.
- 1918** William Park prospecting near Morobe patrol post.
- 1920** William Park winning gold and osmiridium on Waria River.  
District Officer Norman Linehan & Patrol Officer George Ellis enter Wau Valley from Salamaua, patrol attacked by 'Kukukukus'.
- 1921** Park prospecting at Lake Wanum near Nabzab.
- 1922** January: PO Ellis enters Wau Valley from Salamaua, camps for 10 days, attacked by 'Kukukukus', some shot dead. Patrol walked down Watut, uses rafts to reach Markham.  
April: W. Park & Jack Nettleton enter Wau Valley via Ellis route, strike gold on Koranga Creek, which they stockpile, return to Salamaua for supplies.  
December: first visit by Morobe District Officer C. Levien to Park & Nettleton on Koranga Creek.
- 1923** 1 January: first five Miner's Rights issued to Park, Nettleton, Dover, Mason and Levien.  
1 April: gold mining legal under Mining Ordinance 1922.  
August: Nettleton takes out first shipment of 6000 oz. gold.  
September: Levien resigns from government, takes mining lease at Koranga.
- 1924** September: patrol of D.O. Morobe, Edward Taylor, arrives at Winima from Biaru, takes first census of 'Bulolo' people, i.e. Biangai.  
Lutheran Missionary Karl Mailänder arrives at Wau to place mission helpers in Biangai

- villages.
- Arrival of Doris Booth at Wau.
- 1926** January: W. Royal & W. Glasson discover Edie Creek field; gold rush begins.
- September: dysentery outbreak, Mrs Booth opens bush hospital near Cliffside.
- November: wireless station opened at Edie Creek.
- December: 219 European miners with 1324 Papua New Guinean labourers/carriers on field; Biangai men Yanduk of Wandumi and Yawa Paira of Ruarik kill two Waria carriers crossing Bulolo River.
- Other events: future Rai Coast war hero & 1945-50 cult leader, Yali, employed at Wau Hotel.
- 1927** 10<sup>th</sup> January: three more carriers killed near Wandumi; Mining Warden's party attack and burn Lambaura village killing about four Biangai.
- 10<sup>th</sup>-11<sup>th</sup> February: ADO S. Appleby visits Winima as part of full contact patrol of all Biangai villages.
- 14<sup>th</sup> March: Yawa surrenders to Appleby's police at Yombureng for the killings of the Waria carriers.
- March: Royal Commission into the issuing of the Edie Creek leases.
- 18th April: 1st aeroplane lands at Wau airstrip.
- 1928** Jan-Feb: discovery of Hidden Valley by W.H. ('Bill') Chapman; mini-rush of 40 miners to HV.
- April: Placer Development buys options from Guinea Gold in Bulolo Valley.
- 1930** August: discovery of Black Cat field.
- November: airstrip completed at Bulolo
- December: mule track completed from Wau to Edie Creek.
- 1931** March: 1<sup>st</sup> heavy lifting tri-motor Junkers W31 lands at Bulolo.
- May: Fatal crash of Guinea Airways pilot Les Trist (viz. 'Lake Trist') between Lae and Wau. Opening of Day Dawn mine.
- Electric power lines installed between Wau and Edie Creek.
- 1932** March: Initial BGD hydro plant opened on Bulolo River; Dredge No.1 starts work at Bulolo.
- 1932-33** Most of the land alienated in the Wau/Bulolo area is acquired by the Administration by proclamation in the *New Guinea Gazette*.
- 1933** April: 1<sup>st</sup> ascent of Wau-Edie Creek road by motor vehicle (seven hours to summit).
- 6000 labourers employed on Wau & Bulolo gold fields; Baiune power station opened.
- 1934** Albert Schrater starts work on 'Schrater's Race' from Upper Watut to Lyall's Creek (Upper Edie Creek)—d. 1939 without finishing it.
- 1936-37** Activity in Upper Watut: Sandy Creek Gold Sluicing produces 2477 oz. gold; Upper Watut Gold Alluvials NL bankrupted; Irowat Gold Alluvials started work on leases at Surprise Creek (=Otibanda Creek), bankrupted soon after; Gold and Power Ltd working leases near Heyu on Upper Watut.
- 1938** March: Dredge No.6 starts work in Wau Valley.
- 1939** May: Big Wau to Koranga water race—biggest constructed—opens; 9.2 km long.
- September: outbreak of WWII in Europe.
- 1941** August: '6000 hectares' land purchased by Administration.

- December: outbreak of Pacific War, evacuation of Australian families from Wau, Bulolo, Salamaua and Lae.
- 1942** 21 January: 1<sup>st</sup> air raid on Bulolo, all Junkers G31 aircraft owned by BGD destroyed.  
31 January: 1<sup>st</sup> air raid on Wau.
- February: overland escape route from Wau to Bulldog via Banis Donkey (Winima) and Kudjeru prepared for use.
- March: occupation of Lae & Salamaua by Japanese; powerhouses at Bulolo & Baiune, bridges across Bulolo River dynamited by Australians.
- May: Battle of the Coral Sea; Kanga Force formed from 2/5<sup>th</sup> Independent Company & NGVR, flown to Wau & Bulolo.
- June: Kanga Force raid on Salamaua from Wau.
- August: Mubo taken by Japanese, towns of Wau & Bulolo set on fire by Kanga Force demolition teams and abandoned.
- September: Kanga Force fall back to camp at Kudjeru.
- October: 2/7<sup>th</sup> Independent Company reinforces 2/5<sup>th</sup>, repairs made to basic infrastructure at Wau.
- December: General Blamey orders construction of jeep road from Bulldog to Wau.
- 1943** 11-13 January: Raid on Mubo by Kanga Force.
- 14 January onwards: start of 17<sup>th</sup> Brigade AIF airlift into Wau; parties of 2/5<sup>th</sup> and 2/7<sup>th</sup> at observation positions on Skin Diwai and Black Cat tracks.
- 27-28 January: Japanese attack on Wau commences with about 3000 troops; Capt. Sherlock's action on kunai slopes above Wandumi holds up advance on Wau.
- 28 January: Japanese within 50 yds of Wau airstrip.
- 29 January: peak of airlift – 64 C47s (=DC3) land at Wau under ground fire, escorted in by fighters.
- 30 January: 25 pounder field guns landed at Wau and concentrate fire on 'slaughter yards' at in the Leahy's Farm / Crystal Creek (Kwembu-Kaisenik) area, with air support from RAAF Beaufighters – 400 Japanese killed (says J. Sinclair in *Golden Gateway*).
- 3 February: Leahy's Farm & Wilde's Plantation re-taken.
- 6 February: the only serious Japanese air raid on Wau during the battle; 3 bombers & 15 fighters shot down by ground fire and Allied fighters (says J. Sinclair in *Golden Gateway*).
- 9 February: Wau Valley cleared of Japanese forces.
- July: peak of construction of Bulldog Road – 1038 Europeans & 2349 labourers at work, recruited from Kerema and existing labour force at Wau.
- May: Australian & American forces attack Salamaua.
- 23 August: 1<sup>st</sup> convoy of jeeps crosses Bulldog Road.
- 4-6 September: Australian & American parachute landings at Nadzab & seaborne landings east of Lae; 6000 Japanese troops withdraw from Salamaua.
- 11 September: fall of Salamaua - 2000 Japanese, 124 Australian, 81 American dead.
- 16 September: fall of Lae - 2220 Japanese, 188 Australian & American dead; 7000 men of Japanese 51<sup>st</sup> Division escape up Markham, to Finschhafen and into Saruwaged Mountains.
- 1944** Build-up of Allied forces at Nadzab (50,000 Americans) and Lae (20,000 Australians & Americans); Lae-Nadzab road constructed.
- 1946-49** Baiune power station rebuilt, dredges re-habilitated.

- 1947** Tour of Wau and Watut areas by Rev. G. Horrolt from Mumeng. Both areas in grip of epidemics.
- 1949** 1<sup>st</sup> planting of pine trees in Bulolo forestry areas
- 1951** Mrs Booth nominated member of Legislative Council.  
May: Dredge No. 6 closes down (only dredge in Wau Valley).
- 1955** 350 Europeans resident at Wau, 588 at Bulolo; Lloyd Hurrell pushes for release of Administration land for agriculture at Wau and Bulolo against Director of Forests, Jim McAdam; old Markham bridge opened.
- 1957** Department of Forests awarded unused Administration land for re-forestation; Kapin people establish settlement on agricultural leases at Wau.  
Mines Department holds conference on small-scale mining; start of Papua New Guinean involvement as independent alluvial miners.
- 1959** Arrival of Kunimaipa miner, Peter Taparai, at Wau.
- 1960** About 130 registered Papua New Guinean miners at work: in Upper Watut (83), Edie Creek (14), Black Cat (8), Sandy Creek (8), Pinetops-Baiune (18); gold sales handled by Matthew Garrett Pty Ltd of Sydney.
- 1962** Biangai lodge compensation claim over '6,000 hectares' land, inc. parts of Wau town and Edie Creek; Peter Taparai working alluvial lease below Hidden Valley.
- 1963** Omas Genora takes over Cash's leases at Merri Creek.
- 1965** June: End of BGD operations at Bulolo with closure of Dredge No. 5.
- 1965?** Hec McKenzie takes prominent local miners Rikani Hapiango & Omas Genora to Sydney, presented with gold spoons by Matthew Garrett Pty Ltd.
- 1966** Suspension of DC3 services to Wau.
- 1968** CRA does regional survey over Morobe Goldfield.
- 1971** October: formation of Mainland Co-operative Ltd (later Mainland Marketing Ltd) to take an interest in Lae Coffee Mill – original shareholders, with \$37,000 capital, local co-operatives at Sai-Watut, Boana, Aseki, Menyamyra, Finschhafen, Salamaua, Wantoat, Snake Valley, Kaiapit, Kokoda, Popondetta.
- 1972** March: Opening of new Markham bridge;  
July: Supreme Court rules that native title traditionally existed in '6,000 hectares'.
- 1976** November: Biangai paid K64,000 compensation for land lost to mining in 6000 hectares and for past royalty, M. Somare, Minister for Natural Resources, chief State signatory of compensation deed. Golden Peaks pit closed.  
December: Golden Ridges production starts.  
NGG sawmill closed.
- 1978** Foundation of current Hikinangowe settlement.
- 1980** November: Local Land Court hearing over 6,000 hectares. Ownership awarded to Biangai, hunting rights given to Watut and Manki.
- 1981** Take over of NGG by Renison Goldfields Consolidated (RGC).  
October: successful appeal by Watut and Manki over 6,000 hectares, referral back to LLC.
- 1984** RGC opens new plant at Namie mine, employs 300.
- 1986** December: M. Tongia decision over Hidden Valley in Local Land Court (Winima 50%, Kwembu 25%, Biawen 25%).
- 1987** May: G. Laphorne decision over Hidden Valley in Provincial Court (Nauti 50%, Winima



25%, Kwembu 25%).

- 1988** CRA lodges development application for Hidden Valley, later withdraws it.
- 1990** Edie Creek Mining Company Pty Ltd starts operations as subsidiary of RGC.
- 1991** February: Wau District Office burnt down.  
RGC ends operations at Namie.
- 1992** September-October: J. Gankach decision over Hamata in Local Land Court – exclusive use awarded to Yatavo lineage at Nauti.
- 1994** Edie Creek Mining new shareholding – Melanesian Resources 51%, Kukukuku Development Corporation 24.5% & Biangai Development Corporation 24.5%.
- 1997** Purchase of CRA and RGC tenements and properties at Wau by Australian Gold Fields NL (AGF).
- 1998** AGF assets in Wau purchased by Aurora Gold.
- 2000** February: launch of Nakuwi Association.
- 2002** National elections to be held, 15-29 June 2002.

## CHAPTER 1

### INTRODUCTION TO THE PROJECT

The proposed project is for mining of a gold and silver deposit at Hidden Valley, near Wau, Morobe Province, one of three prospects in close proximity to one another that have been the subject of intensive exploration programmes since 1985.

The three prospects, Hidden Valley, Hamata and Kerimenge, lie on the land of landowner groups among the Watut and Biangai people of the Upper Watut and Bulolo Valleys. Court decisions in 1987 and 1992 have determined ownership in respect of Hidden Valley and Hamata; Kerimenge is a small prospect on Biangai land.

This document examines the complexities the project will face in the management of its relations with these groups, and with other stakeholders, if economic considerations make the project otherwise feasible, and the likely socio-economic effects it will have in the immediate impact area.

Its special emphasis is on topics likely to arise during the Mining Development Forum; national macroeconomic effects are not considered in detail.

#### Parameters of the project

The project fundamentals—the size of the resource, and the projected annual production—determine the scale and duration of the economic effects of the project in respect of the people living around it. These in turn are the primal factors that will drive the engine of social and cultural change, development and impacts in the district.

#### *Reserves*

Gold and silver reserves of the three principal prospects in the company's tenements were as shown in Table 1 in mid-2000.

Prospect	Ore body	Au equivalent*
Hidden Valley	60.1 million tonnes @ 2.1g/t Au & 37 g/t Ag	5.1 million oz.
Hamata	4.1 million tonnes @ 3.19 g/t Au	400,000 oz.
Kerimenge	15.1 million tonnes @ 1.6 g/t Au	800,000 oz.

**Table 1 Ore reserves at Wau at mid-2000.**

Status: Hidden Valley, mostly indicated; Hamata, mostly measured or indicated; Kerimenge, mostly inferred and ~50% recovery expected.

\*combined value of gold and silver

On these figures—included here for indications of scale only—the Hidden Valley ore body contains 126 tonnes of gold, which is a figure comparable to the total historic gold production at Wau from 1922 to about 1985, and over 2000 tonnes of silver (Table 2; recovery of the entire reserve is not possible due to limitations of pit design and mill efficiency.)

<b>Metal</b>	<b>Tonnes</b>	<b>Oz</b>
Gold (Au)	126.2 t	3,925,570 oz
Silver (Ag)	2223.7 t	69,164,802 oz

**Table 2 Breakdown of gold and silver reserves at Hidden Valley at mid-2000.**

Hamata and Kerimenge are not being considered for development at this time.

#### *Annual value of production*

Mill production is forecast at 300,000 oz/year of gold and 4 million oz/year of silver for a mine life of approximately 10 years. At conservative commodity prices, this production may be worth K280 million a year (Table 3). The low price of gold and the volatility of exchange rates between the three currencies in which the project will necessarily operate—US dollars, Australian dollars and Kina—introduce considerable uncertainty.<sup>1</sup>

<b>Metal</b>	<b>Oz/year</b>	<b>Tonnes</b>	<b>A\$ dollars</b>	<b>PNG Kina</b>
Gold (Au)	300,000 oz	126.2 t	A\$150 million	K230.7 million
Silver (Ag)	4,000,000 oz	2,223.7 t	A\$34 million	K52.3 million
<b>Annual total</b>			A\$184 million	K283.0 million

**Table 3 Annual value of gold and silver production at Hidden Valley, estimated at mid-2000.**

Gold at A\$500/oz and silver at A\$8.50/oz K1.00=A\$0.65

Nonetheless, it is possible to say that mining at Hidden Valley will be on a similar scale to Placer's operation at Misima, 1989-present, considered to be a medium scale mine in Papua New Guinea terms. The implications for royalty incomes to landowners are discussed in a later chapter.

The largest mining operation previously seen in the Bulolo District was the dredging of the Bulolo flats from 1932-41. Total production was about 40 tonnes up to the outbreak of the war; Hidden Valley promises to be about two and a half times as productive over the same span of time.

It is also possible to say that the 'target' value of royalty, set at 2% of production, is K5 million/year. In Papua New Guinea, royalty is shared between provincial and local level governments, and various categories of landowners, according to a formula arrived at during Development Forum negotiations.

Since the *Mining Act* sets a guideline minimum landowner share at 20% of total royalty, the royalty income over which project area landowners will have immediate control is therefore likely to amount to between K1m and K1.5m annually.

#### **Stakeholder profile**

The stakeholder environment comprises the three tiers of government in Papua New Guinea, principal landowner groups among the Watut and Biangai people of the Upper

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<sup>1</sup> Gold was US\$266.00 on 1 November 2000. A\$1.00 was 62.5 US cents. K1.00 was 0.62 Australian cents.

Watut and Bulolo Valleys, would-be claimants from several other ethnic groups, settlers in the headwaters of drainage systems around the project, and an array of other interest groups including long-standing peri-urban communities in and around the towns of Wau and Bulolo, churches of many denominations, several thousand small-scale alluvial gold miners, estate farmers growing coffee and cattle, and a well-established forestry industry.

#### *Principal landowners—Hidden Valley*

The landowner stakeholders are as determined by a hearing over Hidden Valley held in the Provincial Land Court in 1987. The decision of the Provincial Land Magistrate, G. Laphorne, was to award proportionate rights to three parties present in the court, Nauti (50%), Kwembu (25%) and Winima (25%), over an area of the Upper Watut headwaters south of the line of latitude of 7°27" S.<sup>2</sup> This land is referred to as the 'Area of Common Interest' or 'Shared Ownership Area' (see Appendix B for map).

The magistrate's decision was a solution to the long-standing problem of boundary demarcation in the mountains of the Bulolo-Watut Divide that lie between the permanent settlements and actively gardened areas of the Biangai who live on the east of it, and the Watut, who live on the west of it. The names 'Nauti', 'Kwembu' and 'Winima' are the names of the three traditional villages closest to Hidden Valley.

The Laphorne decision over Hidden Valley:

- is regarded favourably by the representatives of each group present in court;
- has provided a workable template for the company's dealings with landowners over a period of fourteen years;
- is rated as having a possible, but low vulnerability to legal challenge.

On the other hand:

- the meaning of 'Nauti', 'Kwembu' and 'Winima' was not made clear in court and is the subject of considerable disputation among the wider Watut and Biangai communities;
- any failure to follow the spirit of the Laphorne decision in respect of distributing project benefits—and perceptions of benefit—between the three parties, *and at a lower level among their subgroups*, poses the single most critical threat to the stability of the project.

These matters are explored in subsequent chapters.

Let me add that the name 'Hidden Valley' is itself a unifying factor for the landowner groups. It is the only name able to do this. All the other prospects—Hamata, Kerimenge, Upper Bulolo, Upper Wau and so on—are tainted with a legacy of faulty court cases, private deals and partiality. In the cases of some of the minor prospects, company files reveal that exploration work provoked potentially serious disputes inside the villages; this was true of RGC's surface sampling work at Mungowe in the Upper Watut around 1992, for example (Hamata, Kerimenge, Upper Bulolo, Upper Wau are discussed below).

In contrast to this, the phrase 'Morobe Gold Project' used in the present Feasibility Study has mentally registered with few landowners. Those that is has registered with probably

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<sup>2</sup> The line of 7°27" S was the boundary at the time between RGC's exploration licence area EL497 and CRA's exploration licence area EL677.

hold suspicions that some new configuration of project facilities will arise shortly that will upset the balance of benefit set up by the Laphorne decision.

While it is understood that ‘Morobe Gold Project’ sits well with a broader readership, it is recommended that future documentation lays more emphasis on ‘Hidden Valley, Papua New Guinea’ as the location of the project (see *Recommendation 5*).<sup>3</sup>

*Principal landowners—Hamata, Kerimenge, Upper Bulolo, Upper Wau etc*

The principal landowners of the other prospects in the company’s exploration licences (ELs) are also drawn from Nauti, Kwembu and Winima, but each prospect is linked with specific extended families within these villages.

Only Hamata is the subject of a legal ruling, in the Wau Local Land Court in 1992. Unfortunately, the Hamata decision:

- contains flaws in the reasoning of the evidence, and in its presentation (for example, the names of the lineage, clan and village of the winner are misspelt);
- was heard in the absence of three parties appealing the earlier Hidden Valley case at the time, at the magistrate’s direction.

If Hamata becomes the subject of an application for a mining lease at some point in the future, it is recommended that the evidence be heard again (see below, page 26).

*Settlers near project facilities*

The villagers who live closest to the proposed pit area facilities and waste dumps are not landowners, but settlers. They are two groups of Watuts from the Kapau River area who have settled in the headwaters of the Upper Watut, at Hikinangowe and Heyu villages; and people of various ethnic groups, but principally from the Ono River and from the Kunimaipa River, in Central Province, who have settled along the middle part of Big Wau Creek at a string of settlements generically called ‘Wara Muli’. The Hikinangowe and Heyu settlers pay rent or gold tribute to men at Nauti; some Wara Muli people pay rent to Biangai men at Kwembu village.

The Upper Watut settlers entered the area very recently (as late as 1978, in the case of the approximately 81 people at Hikinangowe) and have only permissive use rights over land and bush resources in the area. Their principal cash income is from alluvial mining in both the main stream of the Upper Watut headwaters and its side creeks (see Volume 2 for a summary of the subsistence economy of these areas).

Both groups are environmental stakeholders. In the cases of the nearest settlers at Hikinangowe and Wara Muli, any failure of waste dumps in their respective headwaters would have a profound effect on their quality of life. Because the Hikinangowe people also use the Upper Watut for alluvial mining, and because they have very low annual incomes, excess sedimentation would cause proportionately severe economic hardship.

*The Kunimaipa gold miners*

In addition to the above, several families of Kunimaipa alluvial miners have worked in the Hidden Valley and Kaveroi Creek areas since 1962; these people do not have their

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<sup>3</sup> There is an even stress on the syllables of ‘Morobe’. As Agamemnon says in Troilus and Cressida, ‘Hector will to-morrow be answer’d in his challenge’. Not MorObe, please.

permanent places of residence in the immediate vicinity of the project site but at Kaindi, Nemnem and other places in Wau and Bulolo.

The Kunimaipas, led by Peter Taparai, were among the pioneers of alluvial mining when the industry was opened up to Papua New Guineans after 1957. Documentary evidence places them in the Hidden Valley area in 1962 and they received lease papers from the Mines Department in 1964 (see *Working Paper No. 9*). However, under the terms of an exploration licence a mining company has the right to exclude alluvial miners who are (a) not traditional landowners or their tributors and (b) do not have current alluvial leases. At least since the *Mining Act* 1992, the Kunimaipas have not had leases, though there is a degree of uncertainty over the status of applications they may have pending (along with many miners at Kaindi). In 1993, CRA agreed to buy three leases on Hidden Valley Creek and paid K18,000 for each of them, considered at the time to be the equivalent of gold income for ten years.

The Kunimaipas are not landowners, and do not pay tribute to Nauti for historical reasons, but form a pressure group who have in the past sought to continue alluvial mining close to but just outside the company's direct area of exploration activity.

#### *Other Biangai and Watut people, non-landowner residents in the district*

There are five other Biangai villages: Wandumi, Biawen, Kaisenik, Elauru and Werewere. Approximately 500 people from these places are the blood relations of the Winima and Kwembu landowners.

There are about 15 other Watut villages, and many smaller settlements of related people from the Kapau, Kabu and Tekadu Rivers who now live in the Watut area. All belong to various of what the Watut say are their 'twelve clans' and they all speak the same language.

In all cases, total population numbers await provisional figures from the 2000 national census. The 1980 census figures quoted by Jackson (1988:8) are the most recent data generally believed to be trustworthy. These give a population of 5092 for rural villages in the Upper Watut Census Division; the figure for the Biangai is unreliable but I suggest they number around 1750.<sup>4</sup>

These 'indigenous locals', however, are well outnumbered by second- and third-generation migrants from other parts of Papua New Guinea who live in the two towns and in the peri-urban settlements. A suggested number, pending the release of 2000 census figures, is 25,000 people.

Blowers (2000) believes the alluvial miners among them produce 840 kg, or approximately 26,000 oz, of fine gold a year worth (at the refinery value of about K21/g) about K17.6 million annually.

#### **Cultural considerations**

At Wau cultural factors affect not only relations with stakeholders in the general sense of etiquette and ways of doing things, but also in very specific ways, such as in the aspects of local customary law relating to land when land is a key project resource. I deal with a

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<sup>4</sup> The 1990 census is conceded to have been completely unreliable. In the present area, for example, Nauti village was not visited at all. The 1980 Biangai figure of 992 does not count several hundred Biangai living in Wau town and appears to be a gross undercount for the villages. Figures for 2000 are expected in March 2001.

variety of such matters elsewhere (see Volumes 2 & 3), but single out a key issue here. This is how leaders emerge and what they are empowered to do or say to a developer.

### *Leadership among the Biangai and Watut*

Every project is negotiated between company managers, government officials and landowner leaders. It is important to understand whether each party comes to the job (a) with the legitimacy to speak on behalf of the people behind them, (b) able to confer effectively with them and be endorsed to sign agreements on their behalf, and (c) with the lasting personal and official authority to guarantee the honouring of the agreements.

Passing over the first two parties, the question of ‘leadership’ has given students of social organisation in tribal societies more trouble than almost any other topic. In Papua New Guinea, there is also vigorous debate—daily, in the national newspapers—but not much of it is about the cultural basis of leadership. Leaders are assumed to be in the stamp of Western-style political leaders; they are men (rarely women) who have the consensual backing of their people, practice the art of the possible, and will be replaced if ineffective. (I will call these conventional or ‘political’ leaders.) The main theme of the national debate is the disappointment that people feel about this.

In fact only a few areas of Papua New Guinea traditionally had, or now have, customary leaders that have a reasonable fit to this model (other types were warriors, chiefs, shamans and so on). Our specific problem is that the Biangai and Watut are not among them.

The Biangai do not speak of ‘leaders’ as existing among themselves, instead referring to collections of men and some women who are village ‘elders’. In general, all articulate men, and the articulate women with significant land holdings, are ‘elders’. Decision-making is thus consensual or does not occur at all. A different kind of traditional leader was the *naimbiri*, a warrior admired for his special powers, notably the ability to escape harm from flying arrows, and personal qualities such as fearlessness and decisiveness. However, if this kind of leader was once prominent in ‘civic’ affairs—by no means certain—he has disappeared today. Contemporary Biangai have an abhorrence of personalities who attempt to step out in front in a manner foreign to their custom, and try to ‘lead’, and because of this they invariably frustrate conventional leadership efforts: in anthropological terms the Biangai are an *acephalous* or headless society. In consequence, Biangai culture poses difficulty for front men to step forward and make reasoned decisions on the community’s behalf in an effective and well-received manner.<sup>5</sup>

The premier method for the achievement of high status among the Watut in pre-contact times was to pioneer and seize new land by force, killing or driving away any previous inhabitants. Only one thing capped this achievement—the immortality of having occupied and named places in the cultural landscape and of leaving an unbroken line of male descendants to remember it. As with his Biangai counterpart, this kind of leader is no longer with us today.

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<sup>5</sup> It is the constantly expressed view—in speeches and meetings—of the chief Biangai front man that his people do not get behind him as a leader ought to be able to rely on. However, he is trying to do something alien to Biangai culture.

Attribute	Biangai	Watut
Political groups with defended territories ('tribes', 'territorial clans')?	No	No
Nuclear villages?	Yes	Not traditionally
Primary landowning unit?	<i>Solorik</i> , with ~2-7 lineages.	Descendants of a grandfather
Traditional interaction with other language groups?	Yes, with Biaru and Kaiwa	No
Competitive exchange of wealth in 'big-man system'?	No	No
Inherited leadership positions?	No	Yes
All must talk in public before decisions are made?	Yes	No
Kin outside a patrilineage must be consulted when making decisions about land?	Yes (bilateral system)	No, but non-lineage kin always present
Current emphasis on individual enterprise (e.g. coffee, gold mining).	Problematic	Strongly defined

**Table 4 Some attributes in Biangai and Watut society related to leadership**

Instead, contemporary leaders are characteristically spoken of as *mausman* or *hetman*. They are the heads of genealogical branches, and it falls to them to *kisim maus*, or 'be the voice', of the members of the branches. Men who are genealogically their junior are strongly constrained from offering their opinions separately. (And women do not feature in Watut public dealings.) So strong is this cultural injunction, dissenting views may circulate for years before a suitably non-threatening occasion can be found to make their public expression possible.

Rather than work through points at meetings, Watuts expect that their headmen will have the common sense to automatically know what people think and will give them proper consideration (*'luksave long ol'*) when it comes to sharing in some good fortune. This system has its checks and balances, but the ones that involve tactful diplomacy can take years to operate while those that operate over a shorter time scale tend to be violent.

This matter of leadership style is of considerable importance in relation to the Mining Development Forum that must be held as part of gaining an SML approval and will be discussed further below (see the concept of development, below; local view summary, p. 9; political risk, p. 68).

In summary, leaders in neither area are empowered to decide important matters on behalf of the groups they represent on the strength of their own reasoning. When stuck on a difficult point they may be expected to say (they *ought* to say) they have to refer it back to the village—this is not prevarication, but entirely correct given the limitations of their mandates.

This has further consequences for the manner in which monetary benefits are requested to be paid by villagers. At Nauti, the best documented case, the number of signatories for compensation cheques rose from one—the leader—around 1991, to five in 1993, to 19 individual family heads in 2000 (see p. 30). This is a very positive development and shows maturity in the way custom has caught up with the idealised, but wrong, model of a single leader representing his community on all matters.



In relation to negotiations over Hidden Valley, it is very important for company and government officials *not* to try to deal with figurehead leaders as if they were able to speak on behalf of resources owned as common properties by subgroups among their people (see *Recommendation 2*).

### **Local view summary**

In this introductory section, it is important to get the right picture of what people living adjacent to the mine actually want. Will they be hostile to a foreign developer? Will a hitherto unreported faction emerge from the bush to disrupt company operations? Will environmental complaints become intractable obstacles to running a mine?

#### *The concept of development among the Biangai and Watut*

In common with people in a similar position all over Papua New Guinea, both Biangai and Watut landowners—the stakeholders who have been most intensively consulted during the exploration period and the feasibility study—seek an elusive improvement in the quality of life that they call ‘development’.

It is important to be clear about what they mean by this.

On the one hand, the use they make of this term coincides quite well with the Western concept of a good job, living in a better house, eating better food, drinking and washing in clean water, driving around in a car, putting ones children in proper schools and living longer and healthier lives. Both Biangai and Watut people want to run the types of businesses that arose at Wau and Bulolo during colonial times—coffee planting, raising cattle, gold mining, timber milling and retailing—or train for jobs that bring a permanent income—teaching, office work and so on. These are conventional development aspirations.

But on the other hand, few Biangai or Watut people have given serious thought to abandoning their way of life as Papua New Guinean villagers, even if they reside in town—indeed life would hardly make sense outside the context of *there being a village society from which one has come*.

In the country as a whole, the ‘problem of development’ has come to mean how to reconcile the ideals of improvements in the material standard of living without turning one’s back on village life, cultural norms and customary ways of doing things. There is no place that has been perfectly successful in achieving this, and in instances of failure it is often obvious that the impediments to ‘development’ are to be found among the very norms and customs that villagers hold dear or cannot relinquish.

I make this point because villagers can want mutually incompatible things at the same time: in this case ‘development’ without altering custom. This can be very confusing to outsiders. It is perplexing when a recently requested water tank is vandalised, when an angry villager chops up the planks across the only footbridge his and his brothers’ wives must cross to go to their gardens, or when the only school is closed because the classrooms have been cut down. It is confronting when increased family incomes result in men acquiring more wives and a deepening of domestic violence—reducing gender equity when company policies seek to promote it. Many examples of this nature can be cited (see Banks and Bonnell in Filer 1999).

These are *not* signs that affluence and the material items that accompany it are not ‘appropriate technology’ for the village. They are expressions of latent internal conflict

and contradiction that may have been provoked by many things: a man's feeling that he was not consulted properly, the use of an individual's land as if the whole village owned it, the use of cash for men's but not women's objectives. No-one has easy solutions to these problems but the consensus of people who deal frequently with village development issues is that (a) an attitude of 'hyper-consultation' must be adopted, (b) a hands-on approach must be taken to making village projects work properly, with constant follow-up, and (c) what grafts onto village ways successfully is unpredictable and is best trialed on a small scale at first.

Why this is important for a mining operation is that *the fulfilment of community development objectives* is the only thing in the long run that determines whether villagers are right to make the choice to allow mining on their land. At Wau and Bulolo, more than any other place in Papua New Guinea, landowners are completely lucid about this choice.

#### *The project as a means of achieving development objectives*

In line with their development aspirations just discussed, landowners are keen to see a mining project proceed at Hidden Valley, with qualifications.

They do not hold fears that the project will displace economic activities currently undertaken by them, will result in the dislocation of settlements, or eat into land used by them for subsistence farming and cash cropping.

The first qualification is that they must be able to participate in the economic benefits of the Hidden Valley project in a way that their grandfathers were unable to in the gold rush period. There are two cautions to this:

- landowners openly express the view that successive governments have turned their backs on Wau and Bulolo since Independence—despite Wau gold 'building New Guinea'—and have therefore failed to earn the State's legislated share of royalty;
- a reasonable income is expected, but the equitable distribution of the income streams from the project are more important locally than their absolute scale.

The second qualification is that both sets of landowners harbour the fear that dealings between project management, government and landowner representatives will confer or endorse social, political and economic rankings on particular individuals other than would exist in the normal run of things.

#### *Community views of how leaders behave*

As already outlined, p. 6, neither Biangai nor Watut society, each in its different way, naturally has a 'political' style of decision-making and neither society grooms conventional 'political' leaders. Landowners, therefore, are fearful of what will come to pass at the expected Mining Development Forum. Will men, to whom they gave a qualified endorsement to negotiate, gain a boost in credibility and 'name' that they had not meant to confer on them? Will the benefits that are won be set out in such a way that ordinary people can get past the signatories to get access to them? If something goes wrong, will they have the means to make corrections within the short mine life?

There is some justification for these fears. However, the last major round of negotiations for the establishment of the Nakuwi Association, culminating in its launching in February 2000, went quite well from the point of view of the community because extra committee members were sworn in than had been previously recognised as necessary.

But the observation that landowners do *not* feel their ‘external affairs’ can be conducted by nominees in a manner that they consider safe is demonstrated in two ways. Firstly, large numbers of people insist on attending landowner workshops. Typically this has the side effect of bogging down decision-making and making it extremely frustrating for both the government Project Liaison and the company’s Liaison and Business Development staff to progress issues identified by landowners themselves as being of critical importance. Nonetheless, people would prefer nothing to happen than it to happen without them being there.<sup>6</sup>

### *Violence*

The second expression of dissatisfaction with the behaviour of others is through violence. People who say this imagine sudden assassinations. Sometimes their fears are only too real. On 24 October 2000 an elderly woman warned in my hearing that the Yatavo (Watut group, see p. 26) headman Kepas Hangitau was in danger of his life. On 11 December 2000, Kepas and his son were indeed shot at by masked gunmen on the forest road not far from where the warning was given. Fortunately, the weapons misfired or were not aimed to kill and there were no injuries (see law and order, Volume 2).

No specific links have been imputed by anyone to current issues, but as Kepas himself declared at a well-attended public meeting a few days later, ‘all of us have children who have many different ideas’ (see *Recommendation 3*).

### *Settlers near project facilities*

Because the pit area facilities and dump locations—whatever the final configuration—will be in the headwaters of well-settled creeks, people living along the Upper Watut River and Big Wau Creek have openly expressed their fear of the effects on their sources of drinking and washing water, and for the amenity value of their environs. They are aware through the national daily newspapers of the downstream environmental problems of Ok Tedi, Porgera and Tolokuma.

### *Other Watut and Biangai people*

They are waiting to see what, if anything, their landowning relations will share with them from their direct income from the project. They also expect favourable outcomes if applying for employment or seeking other forms of assistance from the project.

### *Migrant populations around Wau and Bulolo*

As people born in the district (many to parents born in the district), these people want to see their towns rebuilt and their services improved. The older generation, while remembering the hardships of *masta-boi* labour relations, harbours considerable nostalgia for the orderly days of the colonial period when both towns were significant industrial centres.

The younger generation is hopeful of employment, depending on qualifications, and will seek opportunities for business contracts.

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<sup>6</sup> There are ways around this, as discussed below. I must point out that this fear of delegation stems from the nature of Biangai society, on the one hand, and Watut leadership, on the other; it is a separate issue to that of the personal qualities of the representatives.

## **This report**

Social impact assessment is carried out for two reasons: to gain the *approvals* set by the state for issuing a Special Mining Lease (SML), and to provide basic *management tools* for establishing good relations between company and community.

The present study attempts to do this by concentrating on identifying areas of risk in the inter-stakeholder relationships. The discussions can be characterised as basic research findings aimed at feeding into company policies: it is left until later to translate this material into sound operating practice.

In general, risks in dealing with local stakeholders are minimised when contacts between the mining company with the community are:

- Informed: based on knowing the people, places and issues in the project area thoroughly well;
- Equitable: ensuring the orderly and fair delivery of project benefits to those entitled to them.
- Heritage conserving: valuing and helpful in maintaining the integrity of local social forms and life-styles in the face of change (see at greater length, Burton 1997a).

The three volumes that make up this study attempt to address each of these matters. As will be evident, heavy emphasis is given equity in the delivery of project benefits. But it will also be noted that one specific issue—the poor level of social development in some of the landowner communities—features very prominently in many discussions. For the communities affected, this is the single most important factor limiting their ability to benefit from the project and should be viewed with grave concern.

In blunt terms, the worse case outlook in Watut villages is that a fifth of young adults will miss out from benefits entirely, because statistical information predicts that this is the proportion of adults between the ages of 20 and 40 years who will die in the next ten years, if conditions prevailing in the last ten years do not change (see Volume 2).

But there are many complexities in all areas and good outcomes are possible if all parties are attentive. This report attempts to identify, and render with greater precision than previously possible, the core problems of social development in all parts of the project area.

Recommendations are listed in the conclusions, but the study does not attempt to present itself as a ‘Social issues management plan’ nor, at this stage, to wave a flag for sustainable development. The rationale is that this cannot even be contemplated until a more basic hurdle is overcome: that a working mine is delivered with benefits flowing in a fair manner to those entitled to them.

It is more appropriate that practical plans for these things be put together when project planning is more advanced and Development Forum issues have come to the fore and been digested by the three main groups involved: company management, relevant government agencies and the project area residents.

## CHAPTER 2

### HISTORICAL MATTERS

The Hidden Valley project is bound by (a) events occurring in the history of the principal parties immediately prior to their first encounters with gold miners, government patrols and Lutheran missionaries, (b) the subsequent history of mining and land alienation in the Wau and Bulolo Valleys, and (c) a forty year struggle by indigenous groups to come to terms with their own interrelationships and to win back land in a manner that will permit a fairly-shared prosperity.

From the perspective of this report, these things bear on the project as follows:

- in determining who are the principal landowners and interpreting the meanings of what is meant by 'Nauti', 'Kwembu', 'Winima' etc;
- in practical aspects of the economy of the Bulolo District, the presence of the two established mining towns, and the fact that many of the people of the Bulolo District have already been engaged in mining for several generations;
- in the effects this has had more widely on local belief systems: particularly concerning 'destiny beliefs' about the gold rush period, and the relationship between foreign gold miners and indigenous tribal groups.

Outlines of the relevant events are given in this volume. Fuller accounts dealing with various topics may be found in the Working Papers (Volume 3) and through references to other works.

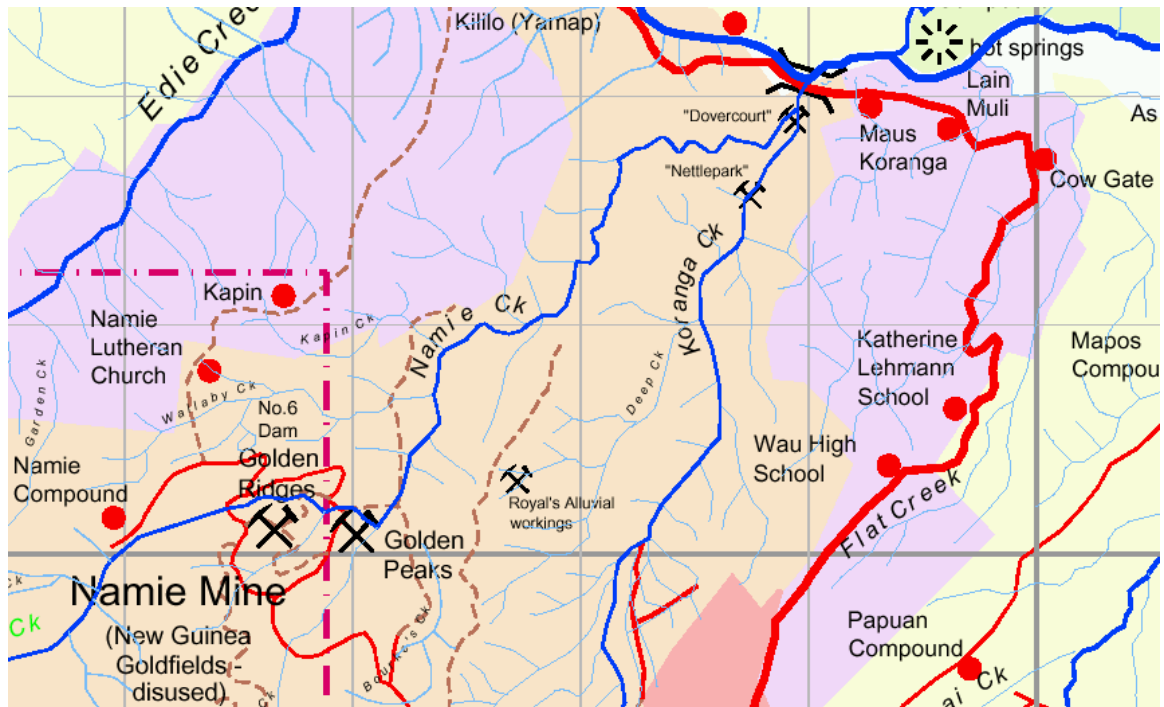
#### **Sketch of the contact period**

Nelson (1976) describes the period of mining in Papua from Sudest in 1888 up to the outbreak of WWI in 1914. Experienced miners were generally earning a reasonable living; but none of the goldfields was rich enough to overcome the fundamental problems of distance to the coast, the threat of attack in areas beyond effective administrative control, and high death rates from disease among both miners and the labourers who worked for them.

Limited mining and prospecting took place in German New Guinea over the same period; in the case of Morobe Province, a Huon Gulf syndicate was formed in the early 1900s, but its licence lapsed before any serious exploration was undertaken. Australian miners were officially requested to explore, for example by Governor Hahl (Nelson 1976:141), and some did; none made significant finds outside the Waria field, however.

#### *Koranga Creek*

The best exposition of the sequence of events leading to the discovery of gold at Wau immediate after WWI is that of Clune (1951), who interviewed or corresponded with many of the key players. Additional accounts are given by Booth (1929), Idriess (1934), Rhys (1942), O'Neill (1979) and Lowenstein (1982); the best bibliographic source is that of Nelson (1976).



**Figure 1 Localities in the vicinity of Koranga Creek, Wau.**

The initial find was made at Koranga Creek by William ‘Shark-Eye’ Park, probably towards the end of 1921. Park and his partner, Jack Nettleton, ran a clandestine mining operation for twelve months from April 1922 until such time as the new *Mining Ordinance*, gazetted in the same year, enabled them to obtain legal mining leases. Nettleton took out 6000 ounces, or about 190 kg, of gold in August 1923, then worth about £17,000 at £2 16s. an ounce and about US\$1.65m at today’s price of about US\$275.00 an ounce. This is said to have been only a portion of the gold they had won in the first year of operations.

Claims that other prospectors struck rich gold at Mt Kaindi—Dammköhler and Oldörp in 1909, Darling in 1910, or Preston in 1914—before their various expeditions ended in disasters and/or rafting accidents can either be dismissed outright or are not supported by the evidence (Working Paper 13).

Only a handful of miners worked the field, rich as it was, until 1924. From 1924 to 1926 perhaps 20 miners were on the field producing about 200 kg of gold a year. The real rush began in 1926 with much bigger discoveries on the Upper Edie; in 1928 there were 200 miners and production was about three tonnes a year (for goldfields statistics, see Appendix A).

#### *The companies*

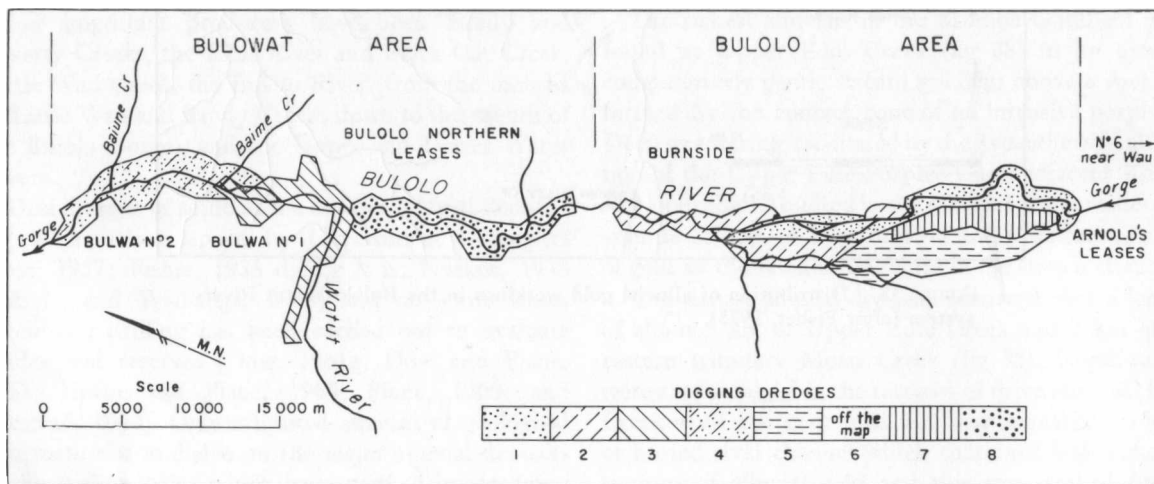
After Park, who quit in 1926 with considerable personal wealth, came an era of lease buy-outs and formation of properly capitalised companies. At Wau, New Guinea Gold Fields (NGG) was the biggest operator, but there were many others: for example, Koranga Gold Sluicing, Sandy Creek Gold Sluicing, Edie Creek Gold Mining Company, The Golden Deeps N.L., Upper Watut Gold Alluvials, Placer Development Limited, and so on.

Reef deposits were found at Edie Creek and mining underground began with the Day Dawn mine in 1931; a number of similar operations were opened before and after the

Second World War. These mines were very small by modern standards, the biggest being Upper Ridges with a total production of 2.9 tonnes over eighteen years.

Open cut mining was carried out at Golden Ridges mine between 1932 and 1941, and other pits yielded gold in the Namie area both before and after the war. Most were small and short-lived; the richest was Golden Peaks, producing about six and half tonnes of gold between 1962 and 1977. The Golden Peaks mill also processed ore brought to it by an aerial ropeway, known in Tok Pisin as the *winis*, from new workings at Upper Ridges.

Bulolo Gold Dredging (BGD) began operations at Bulolo in 1932 and was responsible for the bulk of pre-war gold production: about 40 tonnes in total. Seven of the eventual eight dredges worked the Bulolo Valley gravels (Figure 2); one only, No. 6, worked in the Wau Valley. Post-war operations were not long-lasting and dredging ceased for good in 1965.



**Figure 2. Location of dredging operations in the Bulolo Valley**

Source: Lowenstein 1982:Figure 39; see also Healy 1967.

### The importance of contact history to land claims

A compendium of what are believed to be historical names, places and dates pepper the statements of witnesses in the many court cases over land at the Wau and Bulolo areas, and in the constant stream of petitions and letters that still come to the company and the Wau Mines Office.

#### *Contested names*

The most contested placenames are Wau, Kaindi and Edie Creek. In reality ‘Wau’ comes from ‘Wau Creek’, where a field hospital was established (Booth 1929:173) following an outbreak of dysentery in 1926. It comes from the original Biangai name for Big Wau Creek, *Wo*.<sup>7</sup> ‘Kaindi’ and ‘Edie Creek’ both originate with the Biangai name for Edie Creek which is *Kai Indi*, or ‘River Indi’. Confirmation is given by a prewar map showing part of Edie Creek as ‘the Kai-ende Range (Edie Creek)’ (Commonwealth Of Australia 1943: 223). Mt Kaindi is a contraction of ‘Kai-indi’ to ‘Kaindi’; and Edie is ‘Indi’. Some lease documents spell it as ‘Eadie Creek’; Sinclair repeats the speculation that the

<sup>7</sup> Little Wau Creek was *Moule*. Today, confusingly, both creeks have pidgin names. Big Wau Creek is called ‘Wara Muli’, after an orange factory which used to operate just above Ono Compound, or ‘Klin wara’. ‘Wara Muli’ has nothing to do with the Biangai *Moule*. Little Wau is called ‘Smol Wau’ or ‘Doti Wara’.

mountain was so steep, the discoverer, Bill Royal, wanted to be fitted with an ‘Eadie freewheel brake’ (Sinclair 1998:41).<sup>8</sup>

Claimants to land around Wau, however, have other ideas. Their etymologies typically assert that the placenames mimic, or are rather clever acronyms, of their ancestors’ names (Table 5). This is despite the fact that there can have been little meaningful verbal communication in the first contacts between miners and the armed warriors they so often confronted.

A similar theme is that men of the petitioners’ grandfathers’ generation met a named white man at Koranga or Wau, and the alleged absence of any other party in the area at the time means that this confirms their title to all the land in the valley and that all awards to other claimants have been in error. There is a recurrent feeling that Wau was a place frequented by the Germans:

The photograph of our forefather was given to our grandfather X during German Administration. Included with the photograph were some coins ... in recognition, X was made a Luluai. The photograph and the coins were given to him the same day as prove [sic] of the ownership of the land. The Administrator clearly told X “THIS LAND IS YOURS”.

A witness in the Local Court Case over Hidden Valley (see p. 25) said a white man called ‘Giap Gai’ came to Koranga in 1888 and met his four ancestors. Another claimant has the German Governor, Albert Hahl, shaking hands with his ancestor at Wau itself. Another has his two ancestors, descendants of the biblical figure Japheth, founding Wau and Bulolo towns with a German in 1910—the German’s name was Asak Aepark (‘Sharkeye Park’).

The witnesses’ and petitioners’ grasp of historical fact is poor, yet their statements do contain names and events that did happen, even if not at the times they were supposed to. Parts are drawn from books which may or may not have been once seen in the original at the Wau Public Library, the Bulolo Forestry College Library, or in private hands. (If the originals were once in these libraries, they are not there today.)

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<sup>8</sup> Papua New Guineans often pronounce and spell it as ‘Eddie Creek’ today; this is wrong.



Name	Explanation
Kaindi & Wau	<p><b>Kaindi:</b> Acronym made from the names Koito, Nokimango and Dipato: KAI (from ‘Koi’) + N (from initial of Nokimango) + DI (from 1<sup>st</sup> two letters of Dipato). The Titama man Wauqui was captured at Minava and taken to Salamaua. On the way he was asked a series of questions. Who is your son? What is your real name? Who is your father? He answered ‘Koito, Nokimango, Dipato’.</p> <p><b>Wau:</b> Corruption of Watut lului’s name Wauqui. The Titama man Wauqui was captured at Minava and taken to Salamaua. On the way he was asked his own name. He gave it, but the patrol officer mistook the first syllable for the name of the place.</p> <p><b>Comment:</b> The timing is impossible. The hospital on ‘Wau Creek’ was established in 1926, while one of the men, Koito, was only born in 1932 (he appears aged five in J.S. Milligan’s census of Ekua village in March 1937 and died in 1972). Yet Wauqui mentions his name on the way to Salamaua, implying this was after 1932.</p>
Kaindi	Corruption of ‘ <b>Keya kandi</b> ’. Watut hunters found an unusual mass of game in one place at Mt Kaindi. They said ‘Should we kill these kapuls?’ and one said ‘keya kandi’ (lit: ‘liver feel-it’) meaning ‘I’m afraid, let’s leave them.’
Kaindi	Corruption of name of Biangai ancestor <b>Kaini Rao</b> . Explanation given by Biangai witness in Local Land Court case over Hidden Valley in 1986.
Wau	‘ <b>Wao</b> was the name of our grand grand father [sic] who was shot at Wau by the Germans during German Administration.’

**Table 5 Origins of placenames according to competing informants.**

Sources: various.

### *Summary*

Would-be litigants over land in the Upper Watut—including Hidden Valley—and at Wau and Bulolo produce a mass of competing and conflicting explanations in which hidden explanations of names and landscape features are prominent.

Matters are not helped by factual errors in the racy travel adventures about Wau, and—perhaps with the publishers’ encouragement—artificial controversies over which prospector first found gold at Wau. In reality:

- there is no difficulty in confirming that the first sustained contact with outsiders—and the first contact event to register in the oral history of each of the groups—was at William Park’s alluvial workings on Koranga Creek, beginning in April 1922;
- there is no difficulty in determining that both Watut and Biangai men visited Park’s camp in the first year of its establishment.

A detailed account of the contact period is given in Working Paper No. 13.

### **Local views of the colonial period**

Local views regarding the colonial period have no small bearing on the reception that any present-day company planning a new project at Wau can expect. They take three forms:

- referring to the colonial habits of the past as *sik bilong Australia*, when (i) native title claims over the goldfield were dismissed, (ii) the government's leasing and land acquisition procedure legitimised the appropriation of gold by white miners, denying compensation and royalties to the rightful owners, and (iii) whites treated villagers as a convenient source of labour not as stakeholders in possession of views that needed consulting;
- referring to the past as the *gut taim*, when (i) leaders and the law were respected, (ii) local infrastructure was well maintained, and (iii) alluvial mining took place in orderly fashion, regulated with Miner's Cards, and when the lease system and centralised gold buying operated properly;
- referring to hidden injustices that purport to show how the speaker or writer's group has somehow lost or been tricked out of its birth right.

The first two of these are conventional, if contrasting, political viewpoints. The first was uppermost in people's minds at Independence and resulting in (a) large areas of undeveloped alienated land in the Wau Valley being returned to customary ownership, and (b) strong political support being given to village groups to enable them to finance the purchase of already developed farms and plantations.

This was done with the best of intentions, but its contemporary legacy is that the businesses have now all failed and much of the land that was returned is lying idle, giving rise to a renewed cycle of complaints about the lack of prosperity and economic advancement in the Bulolo District. It remains to be seen whether the next generation can learn from this, obtain professional management advice and rebuild their businesses. An experiment in this respect is Nakokai Timber Resources, a Wandumi business given management assistance under AusAID's Human Resource Development Project (Wood n.d.). Nakokai is doing saw-milling in the former Missim Territory Forest, given back to customary owners in 1972.<sup>9</sup>

It may well be a reaction to the business failures that the idea that at least the latter part of the Australian colonial period was a *gut taim* after all has resurfaced. The people most likely to hold this view are those who made best use of the services that the Australians formerly provided. This includes things like courses to learn how to run cattle, better marketing arrangements for produce, and—everyone's current favourite—consistently good road upkeep.

The third kind of view arises at Wau with cultural beliefs about destiny and hidden knowledge. Variants of these hold that the arrival of white men at Koranga Creek in the 1920s was foretold by omens;<sup>10</sup> others link their ancestors to historical figures from the biblical past, or the early history of New Guinea such as Dr Hahl, a German administrator.<sup>11</sup> A common thread is the renegeing of alleged promises made at the time and the acquisition of land in the Wau and Bulolo Valley by others.

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<sup>9</sup> Late breaking news is that Nakokai has now failed again (February 2001).

<sup>10</sup> One variant of recurrent theme in the Watut area is that the world was created at Hamtai but that a white-skinned man stole daylight and took it away to his country. The Watut who was left eventually learned how to make fire and restore daylight to his part of the world. Later his descendants were surprised to learn that the white-skinned man had returned to Koranga Creek; they did not know why he had come back.

<sup>11</sup> *Doktal* was well known to villagers in German times. German administrative patrols never came to Wau, though.

### *Land acquisition under the colonial Administration*

Miner's rights and mining leases were issued in the 1920 in a very different social and political climate than that of today. Although the legal fiction of *terra nullius* ('land of no-one') was not applied in New Guinea as it was in Australia, the government was quick to gazette as belonging to the Administration land 'of which there appears to be no owner'.

<b>No.</b>	<b>Date</b>	<b>Description</b>
1.	<i>New Guinea Gazette</i> 30/1/1932	4180 ha. Strip about 2km wide on right bank of Bulolo from Maus Kilolo to Bulolo-Watut Junction.
2.	<i>New Guinea Gazette</i> 30/1/1932	2870 ha. Strip about 3km wide on left bank of Bulolo from Edie Creek, north to include Bulolo airstrip and town, up to northern side of Bulolo town.
3.	<i>New Guinea Gazette</i> 15/7/1932	2500 ha. Strip about 3km wide joining northern side of Bulolo town to the Watut River.
4.	<i>New Guinea Gazette</i> 15/9/1933	1520 ha. Area of future McAdam Park.
5.	<i>New Guinea Gazette</i> 15/9/1933 (1776 ha) and other dates including 21/12/1933.	2210 ha. Area of future Kauli Territory Forest, 'Riverside' and agricultural leases between Wau and Magnetic Creeks, including portions and part portions 348, 351, 352, 354, 357. Later consolidated into the '2210 hectares' when investigated by the Land Titles Commission in 1977-78 (Bredmeyer 1978).
6.	'Purchased 11/8/1941'	6000 ha. The land between Edie and Little Wau Creeks, including Wau town and Mt Kaindi. Case heard in 'Appeal No. 2 of 1969 (NG) in the Supreme Court of Papua New Guinea, 19 July 1972' in which prior customary ownership was upheld.

**Table 6 Summary of land portions around Wau and Bulolo taken into Administration ownership.**

This was done under the *Land Ordinance 1922* and its successors. The key areas acquired in the vicinity of the two mining towns were acquired after lands investigations and by gazettal between 1932 and 1941.

Few lands investigation documents from this period survive to this day, but it emerges that the District Officer at Morobe, Eric Feldt,<sup>12</sup> did investigate substantial areas of the Wau Valley in 1928 and 1929 and reported to the Secretary for Lands that certain areas were claimed by 'native owners'; payments were then made to them. The Lands Titles Commission identified these 'native owners' as Biangai in 1978 (Bredmeyer 1978).

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<sup>12</sup> Feldt later became a historically important figure in New Guinea for his part in organising of the WWII coastwatching system.

### *Landowner claims in the Wau Valley from the 1960s*

Starting in the the 1950s, the Land Titles Commission investigated land all over New Guinea with a view to title restoration.<sup>13</sup> In the Wau Valley, two key cases concerned land known as the ‘6,000 hectares’ and ‘2210 hectares’ (Table 6).

The ‘6,000 hectares’, mainly mining areas at Edie and Koranga Creeks, was initially awarded to the Administration, but a challenge initiated by the Wau District Office led to a successful appeal in Supreme Court in 1972. The case hinged on whether any native owners had been found when the land had been acquired 1941; the Supreme Court found that this was so (Papua New Guinea 1972). A subsequent hearing determined that the 6,000 hectares had been Biangai land and in 1976 the State made a payment of K64,000 to representatives of all seven Biangai villages to make up for lost royalties and State usage of the land (Ori 1976). There was renewed activism over the 6000 hectares in February 2001 (see p. 79).

The ‘2210 hectares’, mainly agricultural leases in the Wau Valley, was ruled to have been properly purchased and was confirmed as government land. The written decision of the Land Titles Commissioner, Bredmeyer (1978), and provincial file details (Diritala 1988) summarise the some of the dealings over this land.

It was evident that ‘native claims were received’ some time in October 1933 after the 1776 ha. referred to in Table 6 had been advertised for acquisition in the *New Guinea Gazette* in September 1933. Bredmeyer was satisfied that the claims were made by Biangai people (that is, only the Biangai) and that they had been interviewed by the District Officer, Feldt, in 1928 and 1929. A memo from the Secretary for Lands dated 9 November 1933 that was located during Bredmeyer’s inquiry contained the following:

... the District Officer has since advised that natives claim ownership of the 1,776 ha ... but that they were willing to dispose of the timber and possibly the land (Bredmeyer 1978:8)

Subsequent correspondence over this land is lost until the trail picks up again in the form of the government’s title restoration claim in 1953 which referred to the land of ‘about 2,210 ha. purchased on 21<sup>st</sup> December 1933’ and which included the 1776 ha in the *Gazette*. Bredmeyer’s decision was based on the assumption that the November 1933 correspondence was indeed followed by some form of compensation to the Biangai (but to whom exactly was unknown) and therefore that the land had been properly purchased. He found that the Watut people, who were also challenging the government’s claim to the 2210 hectares in the LTC, had suffered an uncompensated loss hunting rights and awarded them K5802.80, which was paid out in 1978 (though to which Watuts is not known at this stage).

### *Significance of land claims for current development*

Landowner claimants, notably a currently active group of Biangai elders drawn from the seven villages, continue to press their claim for the restitution of their customary lands. In historical context, it is obvious that gold mining in the 1920s and 1930s did result in land dispossession (Martin and Ouellette 1981). Eric Feldt’s investigations notwithstanding, the survey work to identify ‘native claims’ was not a central task of the Lands Department at this time and all parties today—including the Biangai whose oldest

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<sup>13</sup> ‘Restoration’ means in this case the re-establishment of the government’s system of titles following the loss of most records during WWII.

members were infants in the late 1920s—are hampered by the lack of documentation surviving from this era.

The provincial government's file notes that parts of the 2210 hectares were declared as National Land in the *National Gazette* for 25 September 1986 with 'the matter' to be 'dealt with by the National Land Commission at a later date' (Diritala 1988). By 'the matter' is presumed to be meant the question of fair payment by the government—but this later date has not, so far as is known, yet arrived.

For the present project, it is obvious that definitive closure has yet to be obtained in respect of this key area of land; if significant parts of it are required within the 2210 hectares (e.g. a Wau Valley TSF), further work is required (see *Recommendation 6*).

#### *Involvement in mining by Papua New Guineans*

Mining on the Morobe Goldfield before Independence was exclusively at the direction of European miners, Australians the biggest group among them. In the 1920s, the miners worked on their own or in small partnerships; subsequently large companies took over buying up individually held leases. The towns of Wau and Bulolo had populations of over 500 Europeans each, with some Chinese storekeepers, immediately prior to the war.

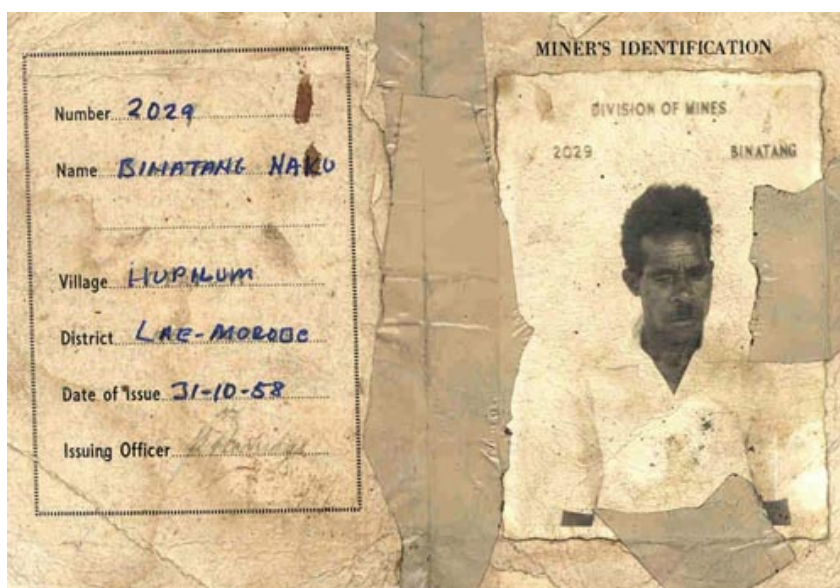
At this time, the Morobe Goldfield was the largest consumer of indentured labour in the Territory of New Guinea. On 30 June 1936 there were 13,121 labourers in Morobe as a whole, 6816 of whom were classified as involved in mining at Wau and Bulolo (Commonwealth of Australia 1943: 151, 221). For men from many villages on the north coast New Guinea mainland and the Sepik River, the first experience of the outside world, including learning pidgin, happened at Wau. Returned labourers in many instances became village luluais, like Yali of Sor village on the Rai Coast (Lawrence 1964).<sup>14</sup>

But that was the limit of local involvement until 1957 when the Administration began to issue miner's permits to Papua New Guineans. By this time the peak of alluvial production was past, but from this point the proportion of the total in local hands rose to 80% by 1975, according to Lowenstein's analysis of buying records (see Figure 4).

Most of these miners were, and still are, operating with the simple methods of dishing and boxing. They are making almost no capital expenditure and have a limited ability to discover new reefs. Lowenstein's and Blowers' work shows that production has dropped steadily since a post-war peak in 1953, as the small-scale miners attempt to make a living from alluvial ground constantly worked over since the 1920s.

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<sup>14</sup> By contrast, labourers in the islands tended to be contracted to plantations and coastal shipping; there was no recruiting in the highlands until after the war, and labourers from the Territory of Papua could not be brought to New Guinea.



**Figure 3 Miner's Permit, 1958.**

Binatang Naku was originally on the goldfields as a labourer for William Park.

In consequence, the returns to individual families bear comparison with the cash-cropping of coffee and in most cases can only be carried out as a supplement to subsistence agriculture. While a great many people now depend on small-scale alluvial gold, none of those using only simple methods and family labour enjoy a level of prosperity greater than found in other parts of rural Papua New Guinea.

#### *The big local miners*

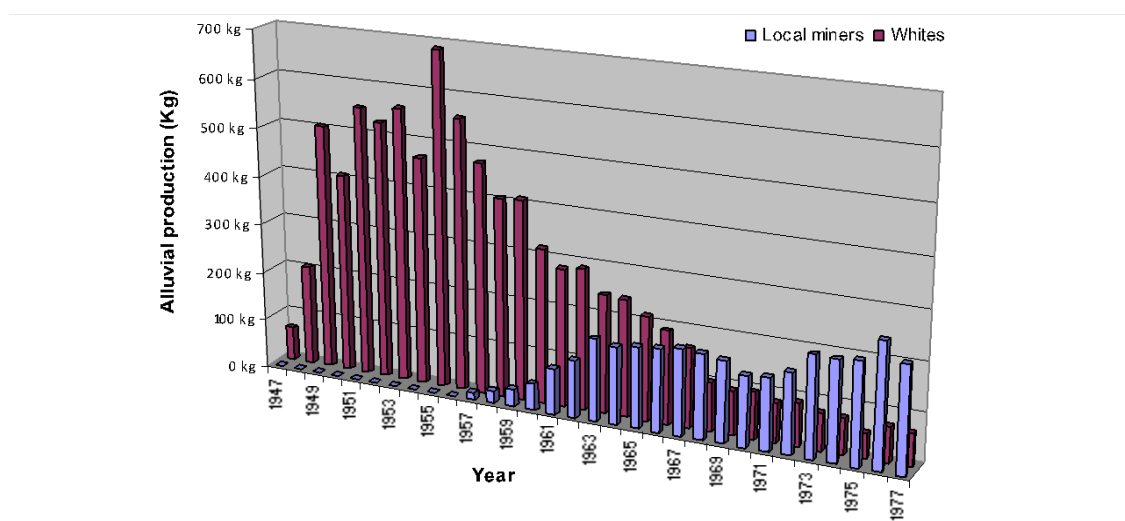
However, there have been some exceptions in the form of local miners with leases on the residual parts of the more productive of the old Wau and Upper Edie workings.

Rikani Haipango of Pararua, Askai Hangitau of Nauti, and Weri Toanto of Akikanda were described in a patrol report in 1969:

There are several entrepreneurs in the census division, the foremost ones being Rikani of Pararua who now resides on his coffee plantation at Wau, carries out a small amount of gold mining and owns a passenger vehicle. Askai of Totomia who lives at the Bulolo Gorge, gold mines and runs a P.M.V. Weri a goldminer and P.M.V. owner living at Kaindi (K.G.T. Sandell, Wau PR 1 of 1969-70).

Omas Genora bought W. Cash's underground mine at Mt Kaindi for £360 after Cash's death in 1958. He and Rikani were the first of the big local miners. Rikani and Omas were encouraged by the then Mining Warden, H. McKenzie, who took them to Sydney to visit Matthew Garrett Pty Ltd, the gold refinery they were supplying (Sinclair 1998:338).

These men had the benefit of (i) the encouragement of experienced Mines Office staff and (b) the presence at Wau of practical mining expertise not now available. As can be seen from Table 7, the leading local producer of the 1970s, Omas, was able to recover about 0.8 kg gold a month, worth about K20,000/month at current prices, for a sustained period. Other famous local miners are Kikingai and Wafamengo.



**Figure 4. The rise of gold production by local alluvial miners, 1957-77.**

Source: Lowenstein 1982: Fig. 76 & Appendix 6B.

#### *Recent medium-scale operators*

Though good strikes are made from time to time, the big local miners have been unable to sustain their early prosperity. Local opinion points to their poor management skills, vulnerability to unscrupulous associates—in Rikani’s case, his expatriate accountant made off with a large sum—and large numbers of friends. But the main problem has been their inability to invest in and maintain the capital equipment necessary to sustain good returns over a long period.

Miner	Origin	Location	Dates	Gold production	Av. monthly production
Omas Genora	Finshchafen	Merri Creek, Upper Edie	1969-78	85.3 kg	0.81 kg
Kikingai Nupango	Watut	Tributary of Little Wau.	1972-78	85.1 kg	0.28 kg
?		Day Dawn Mine, Upper Edie	1969-76	47.6 kg	0.53 kg
Wafamengo	Watut	Midas Creek Junction, Upper Edie	1972-76	41.6 kg	0.71 kg
?		Midas Creek Mine, Upper Edie	1971-78	25.0 kg	1.11 kg
Rikani Hapiango	Watut	Day Dawn South, Upper Edie	1969-78	17.7 kg	0.16 kg

**Table 7 Gold production by leading local miners, 1969-78.**

Source: Lowenstein 1982.

A new development is the appearance of joint venture agreements between landowners and outsiders: long-standing Morobe residents of European origin and newcomers from Asia. These mostly involve working through alluvial gravels with a backhoe and their continued operation indicates that they do recover enough gold to pay their way. Unfortunately, the returns to landowners as groups of people are poor. The ‘agreements’ tend to be arrangements between the operator and individuals, who may personally benefit comparatively well. It is also unclear when the latter are acting as landowners or

as the personal holders of mining leases establishing tribute relationships. The agreements are not made with all the people who are likely to have common property rights on the gravels, which defeats the intention of the provisions in the *Mining Act* to spare landowners the encumbrance of bureaucracy. According to Mike Blowers (pers. comm.), the major effect of the backhoe operators is to sterilise ground that might otherwise have been boxed more slowly by all its owners over a longer period.

### *Summary*

The colonial period was experienced very differently either side of WWII. Before the war, labour conditions on the gold fields were harsh and relations with villages were authoritarian. After the war, the Australians promoted local development and encouraged the participation of the people we now know as landowners in mining (and also in coffee planting and pastoralism).

However, local aspirations in relation to the good standard of living that mining has the potential to create have never been satisfied for various reasons. The colonial past serves as a reminder in people's minds for the wealth that 'built Papua New Guinea', but that in the post-Independence period has left Wau and Bulolo languishing with unfulfilled potential.



## CHAPTER 3

### THE LANDOWNERS: AT LAW, FORMAL ORGANISATIONS AND SOCIAL MAPPING SUMMARY

#### **Preliminary considerations**

The problem for any development project that has to deal with the customary owners of the land it requires is one of arriving at a fair and reasonable, yet legally precise enough, definition of who those customary owners are. In theory a Lands Investigation Report<sup>15</sup> is all that is required to achieve this. In practice there are few areas in Papua New Guinea where land is divided up into the small family parcels that are most suited to the simple mapping of boundaries onto people. Land, parcellised or not, is typically encumbered by the cross-cutting rights of a much wider number of people than a family head and his or her dependents. At Wau, we face additional complexity introduced by the special history of the area.

In recognition of this, a collection of heuristic methods known as ‘social mapping’ (Burton 1992) has evolved to translate vague waves of the hand about landowner groups into the exact terms that are needed for (a) landowner agreements and (b) the harmonious distribution of monetary benefits. The most recent resources legislation reflects this.<sup>16</sup>

As already mentioned, the principal landowners of Hidden Valley have been ruled in court to be ‘Nauti’, with a 50% interest, ‘Kwembu’ and ‘Winima’, with 25% each. The problem is that while the ruling has been generally well received, the magistrate did not attempt to determine the meaning of these names. Indeed, he alternately referred to them as ‘villages’ and ‘clans’.

If they were to be strictly understood as ‘villages’, social mapping would be question of identifying the various hamlets that make up each one, then conducting a census to determine the residents.

If they were to be strictly understood as ‘clans’, then social mapping would involve a different kind of investigation to find out what ‘clan’ means in each place, then to determine the members.

The largest part of my work between 1995 and the present has been to apply the techniques of social mapping to best answer the problems that arise from this. The end point is to arrive at collections of people who, in the consensus of opinion, fit most comfortably with the three names. At the same time, landowners are themselves attempting a similar exercise—in this instance, at self-definition—reflecting their political agenda for recognition.

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<sup>15</sup> A Land Investigation Report, covering the land required by the project, is being written by Mr Winston Belapuna, Special Project Officer, on assignment to the project from the Department of Morobe.

<sup>16</sup> Division 5 of the *Oil and Gas Act* 1998 sets out the requirements for social mapping in relation to the petroleum industry.

## **Landowners groups and the Nakuwi Landowners Association**

Historically speaking, priority must be given to the efforts of the landowners themselves. Over the course of time, in the years immediately before and after the landmark Hidden Valley decision in the Provincial Land Court, four men emerged as spokesmen for the Hidden Valley landowners: Rex Mauri, representing Winima; Wali Kawa, representing Kwembu; Peter Askai, representing Nauti; and Ben Joseph (whose mother is a Watut and whose father, Joseph Kupruwan, was an Aitape policeman who settled at Bulolo) to cover the interests of all three places at once and in some sense to stand for the town communities.

### *The first Hidden Valley landowners: Winima and Biawen*

CRA Minerals initially acquired EL677 in 1982. The first dealings between people in Wau and Bulolo (none yet had the status of ‘landowners’) and the company over exploration at Hidden Valley took place between Charlie Cole and a mixture of people, including Kunimaipa alluvial miners working in the area since 1962, Kilimbu Waimolok of Biawen who had a tribute agreement with one of them, and leaders from Kwembu and Winima. The Wau kiap, David Lape, inspected the area by helicopter with the elders Kawa Inani and Kawe Yawa, of Kwembu, and Rex Mauri, of Winima, in December 1985. Winima village, led by Rex Mauri, emerged as the lead landowners. This state of affairs was short-lived and a hearing was set down for the Local Land Court at Wau.

### *After the Local Land Court: Winima, Kwembu and Biawen*

In December 1986, the Local Land Court awarded rights over Hidden Valley to the villages of Winima (50%), Kwembu (25%) and Biawen (25%).

The principal ‘Nauti’ witness in this court was a Titama man from Kieto, Lenny Yeapuo; he was supported by another Watut, a Menyamy, and Peter Taparai and another goldminer from Kunimaipa, Central Province, who had been working alluvial leases below Hidden Valley since 1962. In their inconsistent accounts, they had worked with the permission of the now deceased Nauti luluai, Qamio Nandayaito, on the one hand, and a Biawen man called Molu Yabi, on the other. The upshot was that ‘Nauti’ case collapsed because none of the witnesses were actually from Nauti and because the testimonies of the Kunimaipas confused their claims.

The transcript of the hearing is so riddled with typographic errors<sup>17</sup> that, during the appeal in the Provincial Land Court, the magistrate G.C. Laphorne wrote ‘I found that I could not clearly follow the reasoning behind the decision of the Local Land Court ...’ and so ruled to hear the entire case afresh. He was correct to do so but, where it is readable, the transcript of the case includes witness statements and cross-examinations with details that have not been publicly tabled elsewhere.

There are frequent references to the joint history of the Winima and Kwembu people and clear use of the Biangai names ‘Kuleimeke’, for Hidden Valley, and ‘Kame Guruk’ for the flat land behind Hamata. Of the latter, a leading Biangai witness, Kawa Inani, said:

... there is a cave and we kill flying foxes there ... this is a hunting ground for our ancestors

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<sup>17</sup> According to this case, the ‘league of native’ [sic] gave New Guinea to Australia (for ‘League of Nations’). The three villages Winima, Kwembu and Nauti are spelled a total of 12 different ways.

I mention this because the at Wau Local Land Court in 1992, the Kwembu and Winima people were excluded from making witness statements about Hamata by a ruling of the magistrate (a Judicial Review over Hidden Valley was still outstanding). Hamata was exclusively awarded in their absence to Nauti; an irony was the fact that the chief Nauti witness forgot to mention the bat cave (at *Hamata hauka* in the Watut language; see Working Paper No. 10).

There are two implications. First, no developer should look at Hamata in the future without ensuring that all parties are allowed to give evidence in court over their rights to what was a hunting area for all of them. Second, this project's requirement to use land just north of the EL677-EL497 boundary for its waste dumps will re-open Mr Inani's evidence (*Recommendation 6*).

#### *Appeal to the Provincial Court: the Tontomea Agreement*

In May 1987, an appeal against the Local Land Court ruling was heard in the Provincial Land Court. The appellants were Kepas Hangitau, Peter Askai and James Saro.

A key meeting was held at the central village of Tontomea under the chairmanship of Ben Joseph a short time before the case was heard. At this meeting, attended by hundreds of people from all over the Watut, the various parties endorsed the understanding that the Equata lineage living at Nauti—the descendants of a man called Yatavo—and their close relatives at Yokua, Akikanda and Minava villages—the descendants of men called Qavaingo and Yandiyamango—would be designated as *ol man i go pas* ('those who go first') and the remainder of the Watut groups would *sanap baksait* ('stand behind them') to receive secondary benefits. This is referred to as the Tontomea Agreement.

The choice of the three men arose from a background of litigation over the previous twenty years in which Watut parties had continually failed to win their claims, including the 1986 Local Land Court and '6000 hectares' cases hearing already mentioned. In particular Lenny Yeapuo had often initiated litigation but he was perceived as always failing because everyone knew he was from Kieto, far from any of the land being discussed. The Biangai witnesses would always be able to point their fingers to the west and say, 'we know where you come from', and he would have nothing more to say.

Kepas Hangitau and Peter Askai were from the Yatavo extended family which is based at Nauti, the nearest Watut village to Hidden Valley, but the two men are not of the Nautiya patronymic that gives its name to the village 'Nauti', but of Equata.<sup>18</sup> James Saro is a Titama man from Menhi.

Next they sought the correct name to go to court with. They could have chosen 'Yatavo', 'Equata clan' or some version of 'Watut', but there would have been difficulties with each of these. As would have occurred if Lenny Yeapuo or James Saro had led the case, the Yatavo were vulnerable to the charge that their real village had been Sapanda until after WWII. Finally, they approached Moses Mumingau's relative, Guyo Saweo, who was (and is) the senior man of Nautiya patronymic living on the forested tracts of Nautiya land that lie to the west of Mt Kaindi where Nauti was originally established (see Volume 2, 'The composition of Nauti village'; Volume 3, Working Paper No. 7). They

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<sup>18</sup> 'Nautiya', 'Equata', 'Titama' etc are called 'clans' by Watuts (*mipela i twelpela klen* when they say it in Tok Pisin), but they do not possess territories, 'clan' leaders, and few other attributes that define them as groups of people. I prefer the neutral term 'patronymic' because this says exactly what the names are: they are genealogical categories.

asked for, and were given permission to use the name of Guyo's *sit paia*, his hearth, namely the place name 'Nauti'.

The name 'Nauti' would have a special strength in court because, as Winima and Kwembu are the nearest Biangai villages to Hidden Valley, Nauti is the nearest Watut village. It was understood that they would sort out a better structure after achieving a successful result in court.

Many other Watuts wanted to participate, reflecting the cultural idealisation that they all belong to 'twelve clans' whose founders accompanied each other on various journeys in the past and whose descendants therefore jointly share the lands they live in today. Those who prepared the case persuaded all these groups to stay in the background, allowing only James Saro to act as a witness to the main story.

The decision was handed down by Senior Magistrate, Geoffrey Laphorne, on 30 June 1987. It granted the Nauti appeal and set out a new distribution of rights to an Area of Common Interest at Hidden Valley among the parties: Nauti (50%), Winima (25%), Kwembu (25%).

*Defining Nauti: a meeting immediately after the Provincial Court case, and Wati Naiko*

Several meetings were held among the interested Watut groups prior to the Provincial Land Court case and immediately after it. Minutes do appear to have been taken at the meetings, but not many survive.

The first meeting after the case was held the next Saturday afternoon, 4 July 1987, at James Saro's house (Nauti – Hidden Valley Decision Meeting, 4 July 1987).

Present were the three appellants, Kipas Hangitau, Peter Askai and James Saro; the four young educated men who were the main force behind the preparation of the case, James Rikani and Moses Mumingau (both now dead), Lengato Giam (Rikani) and Ben Joseph; the other Watut supporters, Mewat Danamawo, Manase M., Patengi Kanawe, Wafamengo P., Mango Mekau, Kipas Spori, Mrs Kikwasingo, Mrs Tapita, and Mrs Diana Wafamengo. Ben Joseph chaired the meeting and took minutes.

The agenda points of interest here framed a demand for HVG to replace labourers and field assistants in its employment with 'Nauti' people. However, there is no clarification of what this 'Nauti' should be considered to be. Was it the village Nauti? Or was it a group of people formed jointly from the extended families of all the men at the meeting?

On 8 July 1987, the Nauti group invited Charles Cole for a preliminary meeting at Nauti village and from this point a new pattern began to form. Where before the 'Nauti group' had always met at various residences in Wau town—giving de facto recognition to the wider group and fitting better with Watut custom of including wide networks of kin—the habit of mining companies to insist on meeting at the village meant that there was quite a brutal shift in the balance of power from the wider group to a much narrower one defined in terms of the residents of Nauti village.

Perhaps in response to this, an umbrella group called Wati Naiko was formed, meaning 'people under Mt Naiko', the latter being the peak which rises above Hidden Valley and is shown as Mount Bell on topographic maps. The method of its formation was one that Watut have seen quite frequently in relation to various other communal schemes; money was collected from people in each of the 17 villages in the form of 'membership fees', and banked in a savings account.

What happened to this money—believed to be about K2500—is not entirely clear. What is certain is that Wati Naiko ceased to be spoken of after about 1990 and use of its letterhead was discontinued by the spokesmen. The reason is that it was soon realised that the lofty ideal of including all Watuts clashed with the reality of paying legal bills and the day-to-day work of dealing with the company.

#### *The four spokesmen after the court case: Hidden Valley Holdings*

The response on the Biangai side was simpler because the two villages had not sought to include others. Nevertheless, with CRA rushing to complete a feasibility study during 1988, all four spokesmen were grossly underprepared to deal with government and company negotiators. Another important consideration was that this was the ‘old’ CRA before the Bougainville rebellion and the closure of its mine at Panguna; there were no community relations staff on hand as we understand them today.

The spokesmen made an immediate demand for K4 million compensation (DME Liaison files, 1988) and then followed their political contacts to engage a consultant, Mr Rom Cibas, to assist them. Cibas helped them set up a landowner company called Hidden Valley Holdings, intended as a vehicle for receiving mining benefits, but these were vaguely conceived and few steps were taken to show how such benefits, if channelled through the company, would reach the people. Cibas took the four spokesmen to Australia with a view to setting up a joint involvement in mine contracts with a Hunter Valley based company called White Industries. In return, the four spokesmen, plus all the other key elders at Winima, Kwembu and Nauti signed agreements with Cibas that he should be their sole agent in talks with CRA and the government ‘including the exclusive authority to negotiate fees, royalties and compensation payments and to receive, control and disburse and moneys receivable’. He was to take a 15% cut of all financial benefits.

HVH obtained a grant of K50,000 from the provincial government to start a fresh food marketing business, which Cibas banked (it was never put towards fresh food marketing).

Because of the sheer number of landowner signatories, the Cibas agreements may have been enforceable at law, although it is probably now illegal to make such arrangements under the current *Mining Act*. Luckily they contained an expiry date of 22 December 2000 which has now passed without incident. Hidden Valley Holdings’ registration as a company defaulted some years ago.

#### *The Nakuwi Association*

In 1997-98, encouragement from the Morobe Provincial Administration and DOM Liaison saw a push to form a landowner association to handle future negotiations with the company and government. Under the *Companies Act*, a registered association must have a valid constitution and be run according to its provisions for elections, terms of office and so on. This was a major step forward for the Hidden Valley landowners, because no previous structure showed how decision-making by executives was to be accountable to the membership.

The Nakuwi Association (‘**NA**uti-**KU**embu-**WI**nima’) was given a public launch in February 2000. With a modest level of interim funding from the Morobe Provincial Administration and assistance in cash and kind from the company, at the time of writing Nakuwi has a permanent office in the Wau SubDistrict Headquarters building, and has a typist and basic office facilities.

The formation of Nakuwi, however, has made very little difference to the daily work of liaison between the company and individual landowners. Nakuwi has shown few signs of any capability in this area. For example:

- while its executives and committee members (*komiti*) are drawn from the villages, Nakuwi per se does not make village visits or show an inclination to rotate meetings among the villages;
- villagers bring their personal concerns to the company not to Nakuwi;
- though it may do so in the future, Nakuwi has not shown signs of authoring the kind of detailed ‘position paper on compensation’ produced by the Lihir Mine Area Landowners Association that formed the starting point for negotiations at Lihir (Filer, Henton and Jackson 2000: 3, 53).

Further problems dog the Nakuwi constitution, which appears to have been a template sent to the association from Lae and not edited to reflect the circumstances of the Biangai and Watut landowners. For example, it is defective in (a) permitting any resident of Morobe or ‘any other part of Papua New Guinea’ to become a member, and (b) in not laying down a specific timetable for elections to the executive positions.

### **Identification of landowners through social mapping**

The second approach to determining who the landowners are for the purposes of company dealings with them is by using the technical methods of social mapping. The objective here contrasts quite completely with the political representation of Nakuwi; it is to discover how the landowner communities are constructed, where the individuals who make them up actually live, and to list not merely spokesmen but all rightful members whether they are adopted children, orphaned children, the elderly, single mothers, or ‘attached’ people who may have had some lesser rights to community resources conferred on them.

#### *The court party ‘Nauti’*

Mirroring the political difficulties experienced by the Nauti landowners after the court case, the question of how to distribute cash paid to them during exploration immediately caused difficulties at Nauti. This helps us see what ‘Nauti’ really means.



**Figure 5. Village meeting at Nauti, 16 January 1993 (photo: L. Giam).**

Hidden Valley Gold made half-yearly payments for occupation and restricted access fees, and bush damage compensation during exploration. To start with, cheques were made out to others to clear debts incurred by the spokesmen. They paid a telephone account and used an advance to fly to Port Moresby. They owed K3509.67 to their lawyer for the costs incurred in the judicial review of their case in 1989. It took two years to pay this off. They had agreed to pay Peter Taparai, the Kunimaipa miner who had witnessed on their behalf in court, K3000.00. There were seldom bankable amounts left over after these deductions, and such cheques as were raised were made out to 'Nauti Land Owners'. The compensation payments were witnessed by the three senior village spokesmen, Kepas Hangitau, Contreas Kipamono, Maor Mita, by Ben Joseph and Peter Askai, and by many others including Naino Kwamio, Len Askai, Maxwell Kepas and, in 1990, Mewat Danamawo, one of the supporter Watuts.

This arrangement persisted until 1991 when a new group called Yakaya was being formed; the first cheque made out to 'Yakaya Business Group' was written in February 1991. It was still not satisfactory, correspondence in company files<sup>19</sup> showing that the government's Project Liaison Officer spent most of 1992 brokering a percentage distribution formula among the constituent groups.

From this point on, cheques were raised for each group separately. The 'Nauti' 50% share was split up as follows: Yatavo, 20%; Qavaingo, 10%; Yandiyamango, 10%; Yakaya as a group, 10%. Payment records from the start of 1993 reflect this breakdown. The Yatavo and Qavaingo groups then fell into dispute among themselves and for a period in 1993-94 asked no payments to be made to them. The subgroup leaders were now collecting the cheques but they did not distribute the money further down, claiming to still have personal debts incurred on behalf of their supporters; they continued to do this long after they should have cleared the debts.

Now not only were the subgroup payments separate, the number of signatories had proliferated at each village. For example at Nauti there were now five: Peter Askai,

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<sup>19</sup> Lengeto Giam to Peter Bennett, 8 July 1992; Lengeto Giam to Peter Bennett, 6 August 1993.

Kepas Hangitau, Naino Kwamio, Wione Anteno and Yatame Yayumdao. (In 2000, there were 19; see Volume 2).

This breakdown into ever smaller groups should not be seen as a society fragmenting under the pressure of modernisation. On the contrary, the problem is that a wide collection of people, with joint rights in a property, had to artificially create a legal vehicle called 'Nauti' to win recognition of this in a court. Having done that, the centre could no longer hold together and we see a separation again into much more convenient groups that (a) the company can deal with and (b) are more suited to their own decision-making.

It should be emphasised that the Biangai parties to the court ruling do not care to recognise Wati Naiko, Yakaya, the 'three ancestors'—indeed anything other than 'Nauti'.

Nevertheless, from the formation of Yakaya to the present, for the party known as 'Nauti' both the company's Liaison Department and the Department of Mining have made the practical substitution of the Yatavo, Qavaingo and Yandiyamango lineages, or *tripela tumbuna* in some correspondence. Yandiyamango had four brothers (Mdaideiko, Tupango, Yamaipango, Aqipango) and the deputies of Yandiyamango spokesman, Moar Mita, are further understood to be drawn from the descendants of these men (Jonam David, Andrew Suta, Andrew Mera, Micah Gaima).

The descent lines they represent are clustered in villages, but they actually make up a minority of people in each place. Some families headed by males are found living at the 'wrong' villages, and a typical explanation is that the family head's parents died when he was small and he was raised by a family in the new place.

The components of Yakaya must first be expanded a little (Table 8). Qavaingo had two wives: Mamatei, whose descendants live at Yokua, and Eqamai, whose descendants live at Akikanda. Each is fully recognised when it comes to receiving benefits. Yandiyamango, however, had four brothers. His father, Pakieo, had five sons by his two wives: Yandiyamango, Mdaideiko and Tupango by his first wife and Yamaipango and Aqipango by his second wife. The brother lineages have no direct status within Yakaya; it is considered that it is the responsibility of the Yandiyamango spokesman, Maor Mita, to make any further breakdown of benefits designated for 'Yandiyamango'. How this actually works in practice is the subject of further analysis in Volume 2.

Also it is obvious that a lot of other people live in the five villages that are the main places of residence of the groups. Who are they and what rights do they have over Hidden Valley?



Patronymic	Akikanda	Kaumanga	Minava	Nauti	Yokua	Total
1. Yatavo	1			74		75
2 Qavaingo	43	1	9	1	50	104
3 Sons of Pakieo						
3a. Yandiyamango			26			26
3b. Mdaheko	23					23
3c. Tupango	23			1		24
3d. Yamaipango			32	1		33
3e. Aqipango		33			1	34
<b>Subtotal</b>	90	34	67	77	51	319
Per cent of residents	45.5%	37.8%	41.4%	23.1%	39.5%	32.2%
<b>All residents</b>	<b>198</b>	<b>90</b>	<b>162</b>	<b>328</b>	<b>129</b>	<b>991</b>

**Table 8** Distribution of all living descendants of the *tripela tumbuna* by village.

This question is especially relevant in the case of Nauti village because of the usage of the name ‘Nauti’ in the Provincial Court. Nauti has 328 residents, but only 74 are Yatavo—who are the rest?

In Volume 2, I try to answer these questions from two angles: by breaking down Nauti into its constituent parts, and by looking at the way some of the company benefits designated for ‘Nauti’ have been distributed during the last ten years.

*The court parties ‘Kwembu’ and ‘Winima’*

It is convenient to deal with these two groups together because they became physically separate villages only in 1946 or 1947 (Figure 8). I give specialised accounts of their social organisation and oral history elsewhere (Volume 3, Working Papers 3 and 12).

To summarise this, the Kwembu and Winima people make up two of seven Biangai villages, all of which are located in the Upper Bulolo Valley. Their social organisation is what I term an *optional bilateral* system; connections through men to land are primary but connections through women, and the rights of women to speak for land in their own right are important. Those connected by men have much greater standing in decision-making, but those connected through women cannot be denied access. There is one of an increasing number of societies around Papua New Guinea where it is now recognised that conventional models of territorial groups that have non-intersecting membership lists (‘clans’), and on which much of Papua New Guinea’s legal provisions for customary land is based, do not work.

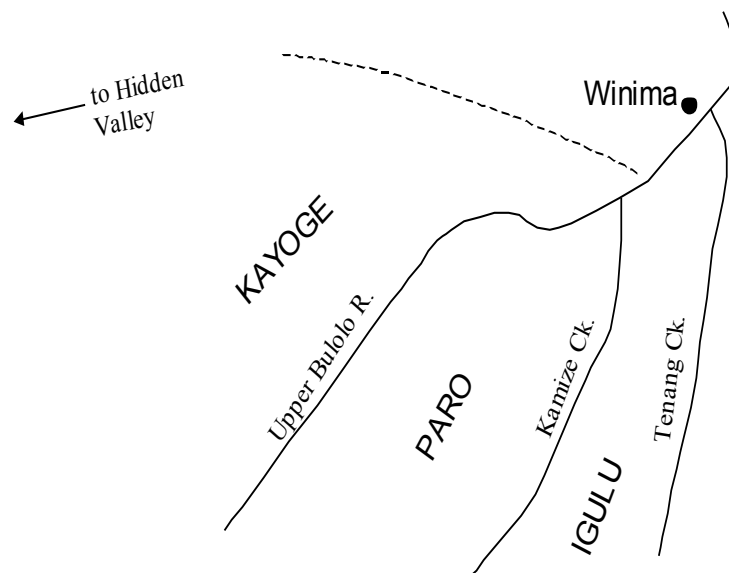
The Biangai do, however, distinguish named descent categories. For Winima these names are Kayoge, Paro and Igulu; for Kwembu they are Simani, Kazibu, Kongawe 1 and Kongawe 2. These may be referred to as *solorik*, a term meaning ‘base or trunk of a tree’—this has the same allusion to genealogy as ‘family tree’ does in English.



**Figure 6. Kwembu elders at Kelogo Wizi Ngane, 3 March 1999.**

Notes: this is the *i kosa* (lit: 'house bones'), or abandoned village site, where the senior Simani ancestor Saroa is said to have died.

Each entity is associated with distinct land tracts<sup>20</sup> but whether this is a function of the *personal holdings* of the particular ancestors who happened to be, say, Igulu, or the land tracts are inalienably Igulu and the ancestors merely used land within them, is a matter of debate.



**Figure 7 Kayoge, Paro and Igulu land tracts near Winima**

Among the seven soloriks, the land designated as Igulu, Paro and Kayoge is reasonably clear, lying between Tenang and Kamize Creeks, between Kamize Creek and the Upper

<sup>20</sup> I use the word 'tract' to convey the fact that border regions are generally vague, especially as they reach into the mountains. Alternatives are 'estate', a permanent and well-bounded area of land to which would-be users can negotiate access by customary means, and 'territory', again a permanent and well-bounded area of land but one owned by a fixed tribal group that defends it against outsiders.

Bulolo, and to the south and west of the Upper Bulolo respectively, and running back into the mountains in each case. These three soloriks appear to have all of their land in one contiguous block.

	Kwembu		Winima	
	Primary	Secondary	Primary	Secondary
<b>1. 'Kwembu' soloriks</b>				
Simani	104	28	18	27
Kazibu	58	70	20	22
Kongawe 1	2	6	16	26
Kongawe 2	14	5		
<b>Subtotal</b>	<b>178</b>	<b>109</b>	<b>54</b>	<b>75</b>

<b>2. 'Winima' soloriks</b>				
Kayoge	19	50	35	37
Paro	26	43	85	57
Igulu	3	19	38	20
<b>Subtotal</b>	<b>48</b>	<b>112</b>	<b>158</b>	<b>114</b>

<b>3. Others</b>				
Biaru	12	5	3	0
Biawen	1	4		
Elauru	1	3	4	2
Kaisenik			0	1
Wandumi	1	1	16	15
Werewere	5	3	10	2
Others	51	60	53	89
<b>Subtotal</b>	<b>71</b>	<b>76</b>	<b>86</b>	<b>109</b>

<b>Total</b>	<b>297</b>	<b>297</b>	<b>298</b>	<b>298</b>
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**Table 9 Primary and secondary solorik affiliations of Kwembu and Winima residents, August 2000.**

The land blocks of the Kwembu soloriks are not nearly so clear to me. In the Kwembu Creek area, different soloriks have a patchwork of smaller blocks than seen at Winima but immediately to the north and west lies the political complexity of the 6000 hectares (see p. 18) and 2210 hectares (see p. 19). It may be necessary to make sense of this in due course, but I have not attempted it yet because of the responses that will be provoked by commencing inquiries here.<sup>21</sup>

From the late 1800s up to the time of contact in the 1920s, Winima did not exist as a single village; instead, a sequence of Kayoge, Paro and Igulu settlements was founded and abandoned in quick succession. These places are visible today as *i kosa* (lit: 'house bones'): levelled areas on grassy spurs and ridges that were once encircled by thickets of bamboo.

<sup>21</sup> Note that Mr Belapuna's Land Investigation Report will cover land in this area.

The modern Kwembu people, comprising Simani, Kazibu, Kongawe 1 and Kongawe 2 soloriks were closely associated with one another under the covering name Ruarik. They lived mixed together in various settlements near Winima and on Kwembu Creek. What must be remembered is that the numbers of people living in these places was very small: perhaps no settlement exceeded sixty people.

People are not members of one solorik exclusively: they have as many possible affiliations as they can trace genealogically. In practice, most people actually exercise rights in two or three soloriks; Table 9 gives the breakdown of the first two choices at Kwembu and Winima.



**Figure 8. Susanna Panga (Winima elder: Kayoge) and Kawa Inani (Kwembu elder: Simani) with Rex Mauri of the Nakuwi Association at Simanirang, 5 March 1999.**

Simanirang was the joint village of the Kwembu and Winima people from about 1941-47. The place shown was where Susanna and her husband, Mauri Kaini, had their house. (Note that in the Biangai system of bilateral social organisation ‘women can be fathers of the ground’—in this case Susanna can pass on the rights of her Kayoge Walekpelang forebears to her children.

Only two soloriks, Simani and Kayoge are understood to own the land around Hidden Valley. This is not mentioned anywhere in the court decision over Hidden Valley; it is that people at the two villages place Simani and Kayoge ‘in front’ of the other soloriks. This was remarked on by Jackson shortly after the case; he notes that Hidden Valley compensation payments in respect of ‘Kwembu’ were being passed on to Simani in 1987 (Jackson 1988: 22).<sup>22</sup>

A potential problem therefore arises if not all members of the two villages are Simani or Kayoge. In fact, not all members of the villages have a primary affiliation to any of the ‘home’ soloriks: 40.1% and 47.0% of residents at Kwembu and Winima, respectively, do not.

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<sup>22</sup> And just as the Kwembu and Winima people do not care how ‘Nauti’ is made up, the Nauti people are not interested in the details of landownership within Kwembu and Winima.

Highest ranked attachment	Kwembu			Winima		
	F	M	Total	F	M	Total
Simani	62	69	131	5	3	8
Kayoge	30	31	61	19	26	45
<b>Subtotal</b>	<b>92</b>	<b>100</b>	<b>192</b>	<b>24</b>	<b>29</b>	<b>53</b>
Kazibu	13	21	34	9	11	20
Kongawe 1	1		1	1	1	2
Kongawe 2	5	5	10			
Paro	3	1	4	58	58	116
Igulu	2		2	17	33	50
<b>Subtotal</b>	<b>24</b>	<b>27</b>	<b>51</b>	<b>85</b>	<b>103</b>	<b>188</b>
<b>Other</b>	<b>34</b>	<b>20</b>	<b>54</b>	<b>30</b>	<b>27</b>	<b>57</b>
<b>Total</b>	<b>150</b>	<b>147</b>	<b>297</b>	<b>139</b>	<b>159</b>	<b>298</b>

**Table 10 Highest ranked attachment of Kwembu and Winima residents, August 2000.**

Nevertheless, because of the flexibility of Biangai social organisation we can rearrange individual affiliations to promote lesser ranked affiliations to first place; that is if a person has some connection to either of Simani or Kayoge,<sup>23</sup> then this goes first, then other 'home' soloriks, then the 'home' soloriks of the other village. The results are shown in Table 10. At Kwembu 64.6% (192 of 297) of residents but at Winima only 17.8% (53 of 298) of residents have a blood attachment to Simani or Kayoge either through their mother or father, or through adoption.

Still, the proportions with *no affiliation* to any of the 'home' soloriks is greatly reduced to 18.2% and 19.1% of residents in each place. Many of these are spouses and 'attached' people from other places. At Kwembu they included 20 people from Menyamya, Aseki, Kaintiba, Tekadu or the Upper Watut ('Watut tasol' in Biangai parlance), 8 from other places in Morobe and 7 from other places in PNG (Madang, Rabaul, Tufi). At Winima they included 24 'Watut tasol', 7 other Morobe, and 15 from other places in PNG (Madang, Simbu, Goroka, Bena, Kerema, Manus Rabaul).

Many have rights by virtue of being married into Kwembu or Winima families, but some do not. Special mention should be given to the 33 members of the Tona family, originally from Okanaiwa, Aseki. Some are married to Winima spouses; the remainder are what people would call 'citizens' of Winima, but they have no land by birthright.

#### *Social mapping: preliminary summary*

Further analysis is given in Volume 2, but it is obvious that complexities of Watut residence and the considerable diversity of origin of people in the two Biangai villages were unknown to the Provincial Land Magistrate.

<sup>23</sup> The small Winima solorik known as Walekpelang is included in Kayoge figures throughout.

However, if he had known of this it is not certain that he would have framed his decision in any other manner than he did. I suggest that his endorsement of the blanket terms ‘Nauti’, ‘Kwembu’ and ‘Winima’ has proved a safe and conservative interpretation of who the landowners were, but one which leaves the responsibility for its translation into specific beneficiaries up to the people involved. This means the company, the DOM Liaison Office and the people who make up the three court parties.

There are good signs that this task can be carried out effectively. In cases that I examine in Volume 2, I have found that all groups have found a way to share some benefits effectively, as modest as these may have been to date, among their members. The distribution of benefits in kind—iron roofing sheets and school fee subsidies—has been particularly wide. On some measures, notably school fee subsidies among the Watut groups, it is the supporters who have had the lion’s share and the landowners who have missed out.

This is in happy contrast to the bickering over who should sign for compensation money of the early 1990s, the appearance of secrecy that marked the dealings of Hidden Valley Holdings, and the anxiety that marked the formation and registration of Nakuwi between 1997 and 2000.

Still, the question of how much larger benefit streams should be distributed if the project goes ahead remains unresolved. Design considerations are discussed in the next section.



## CHAPTER 4

### THE LANDOWNER COMPENSATION PACKAGE QUANTIFIED: PRINCIPLES, OBJECTIVES AND NEGOTIATING POINTS

#### Introduction

The *Mining Act* provides for compensation to landowners for damages to land and bush by mining and the sharing of a 2% gold royalty between them and their provincial government. In theory, the combination of the Valuer-General's list of rates for compensatable items and a Land Investigation Report (LIR) provide the means of calculating the former, while the *Mining Act* awards landowners 20% of the latter.

This said, there has been a great deal of change in the way compensation, royalty and other benefits streams have been quantified, organised and administered over the last 20 years.



**Figure 9** Morobe Premier Jerry Nalau arriving at Minava to open the community hall,  
29 May 1992.

#### *Establishment of Liaison Office at Wau and opening of community halls*

As well as failing with its mining proposals for Hidden Valley in 1988, CRA's exploration activities at Mount Kare were overrun by a rush of 8000 alluvial miners (Vail 1995), and at Panguna a major review had been ordered by the government (Applied Geology Associates 1989). At Hidden Valley, landowners had opened the year with a

demand for K4 million in compensation.<sup>24</sup> Later the Panguna mine closed for good (July 1989) and the Mt Kare camp was burned down (January 1992).

There is no doubt that these matters caused the company to proceed with extreme caution at Wafi and Hidden Valley and, in particular, to open a permanent Liaison Office at Wau.

Immediate initiatives were sought to entrench good relationships with landowners and their political representatives. (Steel frame and colourbond) community halls were built at Kwembu, Winima, Nauti, Minava and Akikanda. The opening of Nauti's on 25 November 1991 was attended by the Premier of Morobe Province, Jerry Nalau, the MP for Bulolo Open, Matthew Bendumb, and the national Minister for Trade and Industry, Galeva Gwarara. Similar ceremonies marked the openings at other villages in 1992.

In the same period, village representatives and CRA (together with Placer in 1992-93) signed agreements over various kinds of community services the company would provide during exploration.

#### *A short digression*

The above seems an elaborate way of beginning an answer to the question developers often want to ask first: how much will landowners cost me?

This is to ask for a solution to the simple equation:

$$C = C'$$

where  $C'$  = the assessable compensation value according to a knowable scale. The belief that this equation does or could represent the phenomenon of compensation in Papua New Guinea has led to many attempts within the mining industry to arrive at 'standard compensation agreements', 'standard categories' and 'standard rates' of compensation, the latest of which was commissioned by the Chamber of Mining and Petroleum recently (Filer, Henton and Jackson 2000; see also Toft 1997, Valuer-General 2000).

However, it is now well proven that these matters play second fiddle to two other things: (a) that recipients must be satisfied with the structure of the total compensation package and its division among them, and (b) that they must be satisfied in relation to historical trends and the latest negotiations at projects elsewhere in the country.<sup>25</sup>

McGavin throws in the observation that 'being in actual possession of something gives it a larger value ... one should expect that the parties who are in possession will tend to place a higher value ... than will other parties who assess their value' (McGavin 1993:13). He calls this weighting factor an 'opportunity cost' favouring recipients.

So the phenomenon of compensation probably follows an equation of the form:

$$C = \frac{C'O}{S_1 S_2}$$

where  $C'$  = assessable compensation value at 'standard rates'

$O$  = the factor by which opportunity cost values exceed strictly assessed values

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<sup>24</sup> Details in file C11-8-0 at Project Liaison, Department of Mining, Konedobu.

<sup>25</sup> Some agreements, willingly signed and resulting in benefits divided up to the complete satisfaction of the recipients, have had to be renegotiated when landowners elsewhere received better deals, notably those with the Star Mountains landowners which were upgraded in 1991, after the Porgera agreements, and again in 1997, after the Lower Ok Tedi agreements.



- $S_1$  = a factor expressing satisfaction at the division among local recipient parties ranging from 0, no satisfaction, to 1, complete satisfaction
- $S_2$  = a factor expressing satisfaction in relation to nationwide trends ranging from 0, no satisfaction, to 1, complete satisfaction.

This essentially means that the solution depends not just on the numerator—basing compensation calculations on standard rates (and trying to keep the opportunity costs bargained for by landowners down)—but on the denominator—trying to keep satisfactions about the compensation package itself as high as possible.

In the second version of the equation, compensation costs rise steeply when satisfaction drops away.

*What is compensation anyway?*

Notwithstanding its client's terms of reference, the Chamber of Mining and Petroleum's consultancy team pointed out that the ambit of the concept 'compensation' is now far wider than its original narrow definition as recompense for damage to land and improvements on that land:

... the authors would suggest that all benefits provided by licensees and tenement holders at their own expense form a legitimate part of the total compensation environment. The broad definition of compensation adopted here is therefore 'community benefit at company cost' (Filer, Henton and Jackson 2000:2).

In theory, the formal benefit streams accruing to landowners at Papua New Guinea mining projects are only six in number:

1. royalty;
2. land rental fees (lease payments) and compensation for damage to land, cultural sites, and the loss of assessable vegetation and improvements;
3. employment;
4. spin-off business and business development assistance;
5. landowner equity in the project and dividend payments;
6. improvements to public infrastructure including Tax Credit Scheme and Special Support Grant projects;

But really a seventh benefit stream comprises:

7. optional 'village development trusts', housing schemes, water supplies, village health programmes, assistance to schools and clinics, education scholarships, one-off grants to sports carnivals, and the like.

They are obviously things of 'community benefit at company cost'. They are provided for many reasons. Government services have a habit of collapsing around mining projects; the formal benefit streams leave out some categories of people around the project; it is invidious to see basic services extended to landowners but not to their neighbours. These extra forms of help are aimed at reducing people's disappointment about these things.

In the logic of my equation, the extra spending on such items is intended by managements to *reduce* the overall long term cost of total compensation, because it is intended to redress inequities, be better targetted and more in line with what *all* stakeholders want, and thus to keep levels of satisfaction about what people want out of mining at a high level.

## **Benefits during exploration, 1988-2000**

While a mining company is obliged by the *Mining Act* to make even more limited compensation payments during exploration, in practice a much wider spread of benefits is extended to local stakeholders by exploration companies, and Morobe Gold is no exception. The benefits provided by this project have so far included:

- annual compensation payments for land damage and vegetation clearance in the tenements (EL497, EL677 and others);
- employment;
- education scholarships;
- infrastructure in villages:
  - village meeting halls with water tanks;
  - allocations to landowner families of sets of 22 iron roofing sheets, ridge caps, gutters and small tanks (Placer/CRA);
  - donation of one house each to Nauti, Kwembu and Winima (RGC);
- annual ‘village budgets’ (Placer/CRA, MCG);
- K200,000 package of ‘goodwill money’ (CRA), and donation of vehicles to Nauti and Kwembu (RGC), on these companies selling their ELs;
- health programmes:
  - assistance to Bulolo Health Centre to run health patrols to Watut villages (CRA, MCG);
  - assistance to Wau Health Centre to carry out special health projects (e.g. bednetting) in Biangai villages (CRA);
  - access to Wau office clinic to families of employees and landowners (MCG);
- miscellaneous assistance to schools and clinics, sports carnivals etc.
- small scale spin-off business (security, maintenance and haulage contracts) and business development assistance;

As can be seen, there are many optional items in the list. There is no doubt that the managements of the four separate companies involved in the past have all arrived at the same conclusion: that the approval they needed to secure access to their exploration sites *would not have been forthcoming* if they had not acted to meet local aspirations in this way.

A breakdown of the value of some of the categories can be given.

### *Compensation and lease payments*

CRA, AGF and MCG’s records were available for analysis. They commence with CRA’s tiny payments in 1985 and rise to the K36,500 assessment for 1999, the last full year for which payments have been made. The largest single component in 1999 was ‘social inconvenience & bush disturbance’ in the 662 hectares at Hidden Valley designated as the Area of Common Interest, paid at the rate of K12.83 per hectare. Historically, lower rates were used following the Valuer-General recommendations at the time. For the purposes of establishing a new basis for compensation when Aurora assumed management of the company, all rates were reset in 1999-2000 to reflect the rates agreed in the 1998 Wafi Compensation Agreement, which used K10 per hectare for this

category. The K10 was CPI indexed by 5.33% to obtain 1998's rate and this again by 21.8% to obtain 1999's rate of K12.83 per hectare (Table 11).

Year	Nauti	Kwembu	Winima	Grand Total
1985*	K197.50	K98.75	K98.75	K395.00
1986*	K1,323.75	K661.88	K661.88	K2,647.50
1987*	K1,567.50	K783.75	K783.75	K3,135.00
1988**	K7,866.29	K1,757.30	K1,757.30	K11,380.89
1989	K1,393.63	K696.82	K696.82	K2,787.26
1990	K2,037.75	K862.13	K862.13	K3,762.00
1991	K4,512.00	K1,315.50	K1,315.50	K7,143.00
1992	K2,519.75	K1,259.88	K1,259.88	K5,039.50
1993	K3,092.60	K2,419.61	K2,467.30	K7,979.51
1994	K2,648.00	K1,324.00	K1,324.00	K5,296.00
1995	-	-	-	-
1996†	K12,843.50	K9,435.25	K5,933.25	K28,212.00
1997	-	-	-	-
1998‡	K4,574.58	K5,277.90	K8,787.52	K18,640.00
1999	-	-	-	-
2000§	K15,049.11	K14,221.58	K13,118.34	K42,389.02
<b>Grand Total</b>	<b>K59,625.96</b>	<b>K40,114.33</b>	<b>K39,066.40</b>	<b>K138,806.68</b>
<b>Annual mean</b>	<b>K4,586.61</b>	<b>K2,507.15</b>	<b>K3,005.11</b>	<b>K10,677.44</b>

**Table 11 Annual payments for land rental and compensation for land damage and vegetation clearance by CRA, AGF and MCG.**

Notes: \* payments 1985-1987 for EL677 were not paid to Nauti; \*\* a catch-up payment to Nauti was made in 1988 and the total for this year exceeded K20,000; † CRA's final payment in 1996 included 1995's assessments; ‡ AGF's payments were made at once by the administrator in 1998; § MCG's first payment under Aurora included 1999's assessments and 2000 to 30 June. Payments made in EL497 by RGC not available.

Procedures for distributing cheques to landowner parties have varied in the past, and have sometimes had to be withheld pending the resolution of internal disputes. Nonetheless, the long period of exploration and the very gradual increase in the amounts to dispose of have given landowners plenty of time to air grievances and come to stable arrangements among themselves. The 1999-2000 payments are discussed in detail in Volume 2 under 'Social mapping of landowner villages'.

### *Employment*

The total workforce requirements are set out elsewhere in the Feasibility Study. Here I will only deal with the viewpoints of landowner groups in relation to employment policy and their 'pattern of employability'.

Firstly, landowners desire employment. But, in familiar vein, the overall numbers of landowners in employment is not as important an issue as the equality with which selection is made between the three main landowner parties. The policy is for local hire to follow the 50:25:25 rule between 'Nauti', Kwembu and Winima in respect of Hidden Valley.

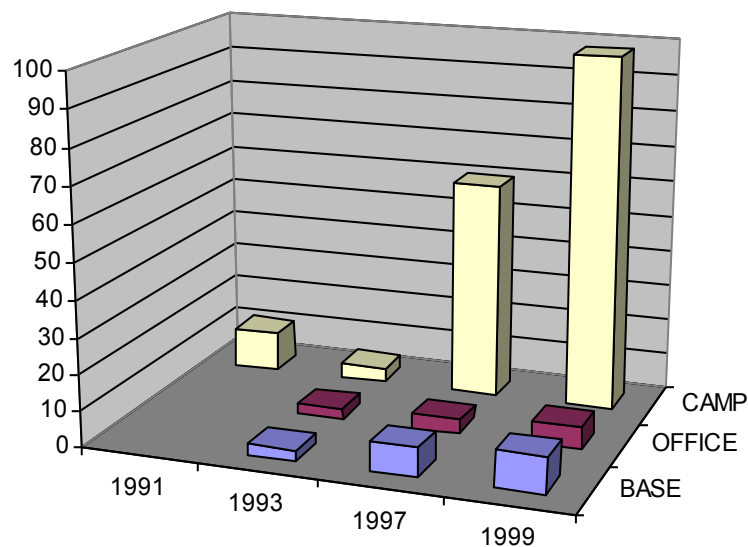
Implementation of this policy appears not to have occurred properly until about 1995. Data to hand showing snapshots of the origins of CRA's and MCG's employees (Appendix C) show few direct landowners employed at all in 1991 (6 of 24) and 1993 (10 of 31). However, exploration in this period was low key and CRA Exploration had retained only experienced, mostly non-local staff.

In 1997, AGF mounted a drilling campaign at Hamata (owned by Nauti only) and this is reflected in the large group of Yatavos (19) then at work; they were still outnumbered by 'supporters' (32) from other Watut villages, and recruits from elsewhere in PNG (51 out of 124).

In mid-1999, MCG was at the height of its exploration effort at Hidden Valley and among male employees, 62 were Watuts, 49 were from Kwembu and Winima, and eight were from other Biangai villagers. (The extra number of Watuts is explained by a small number looking after the Hamata camp).

A breakdown into simplified job categories is given in Appendix C. The data show the considerable success of the Biangai and Watut landowner villages and their supporters in being able to take up low-skill positions (labourers, drill offsidars etc) in the exploration camps, but their very poor ability to increase their number in maintenance and technical/clerical positions, which are all located at Wau. During the later stages of exploration the overall numbers increased substantially in these areas (drivers, carpenters, logistics, GIS technicians, geology assistants). While the landowner proportion kept pace with the increase, at about 30% of these categories combined (1997, 1999), the potential for increasing it is limited as the company already has almost all the presently employable people with these capabilities from landowner villages (Figure 10).

In professional areas, of which geology is the only one with significant numbers, no landowners were employed at all. Against this, the company has had Biangai and Watut Liaison Officers since 1992 and, though this department is not expected to be a major employer, it can accommodate a further local intake (as has already happened).



**Figure 10 Growth in numbers of Biangai and Watut employees in CRA, AGF and MCG workforces, 1991-1999.**

The 1999 data also confirm a pattern established from early exploration days: the workforce is almost entirely male. Only two Watut and three Biangai women were employed. One of the Watut women was a domestic; one a secretary. Two Kwembu women were secretaries; one was a domestic.

*Company support for the education of landowner children 1990-2000*

The companies have all had policies of helping with school fees. The current one is that parents must pay their own fees for children up to Grade 6, then the company undertakes to pay half the fees in subsequent years of school, vocational school or college/university. There is some flexibility in the case of university students (of whom there have been very few so far) or those with special course requirements. There has been a steady expansion in the number of students assisted over time, and only in one year, 1998, when AGF's cheques amounting to half the year's fees were dishonoured, has there been an interruption.

I am unable to say why there were so few beneficiaries of the scheme from 1990-1995. I think it reflects the lack of incentives for primary school children to get good enough marks to proceed to High School, rather than any capping of the assistance programme in these years. It should be added that the company does not select students for assistance; landowner representatives submit the names of the school students at the start of each year and these are usually all accepted for support. This point is important, because the way the scheme has benefitted different categories of people is uneven.

As can be seen from Table 12, 'Nauti' has had over K27,000 worth of school fee assistance since 1990, the greatest amount of any of the three villages. Does this mean it has been able to redress the imbalance in skills that was evident in 1988?

Sadly, the main target, Nauti village itself, has been missed. Table 13 shows the breakdown by landowner subgroup, rural and urban residents, and 'supporters' as opposed to primary landowners. From this it can be seen that the bulk of 'Nauti' assistance has gone to the secondary groups and to those living in town. *Only K178 has been spent on the fees of Yatavo landowner children living in the village.* The village is situated 12 km from the nearest school by foot track and the children have not been able to do the Grades 1-6 needed to qualify them for the scheme. They have received 0.4% of the total 'Nauti' allocation.

Year	Kwembu			Winima			Nauti			Grand Total
	F	M	Total	F	M	Total	F	M	Total	
1990								440	440	440
1991	650	400	1050	150		150	150	730	880	2080
1992	110	180	290					780	780	1170
1993								570	570	570
1994							165	453	618	618
1995	110		110	825	590	1415	275	970	1245	2770
1996	180		180	1500	660	2160	1215	1573	2788	5128
1997	180		180	900	1240	2140	780	1845	2625	4945
1998	255	168	423	734	796	1530	1253	973	2225	4178
1999	765	1096	1861	1488	2475	3963	3024	2475	5499	11,323
2000	1200	1460	2660	2550	2315	4865	3898	5505	9402	16,926
<b>Total</b>	<b>3450</b>	<b>3303</b>	<b>6753</b>	<b>8146</b>	<b>8076</b>	<b>16,223</b>	<b>10,759</b>	<b>16,312</b>	<b>27,071</b>	<b>50,047</b>

**Table 12 Education assistance to principal groups, Kina, 1990-2000.**

Sources: CRA, AGF, MCG files. Excludes RGC assistance.

On a positive note, there is gender equity in education at Kwembu and Winima. Among all Nauti groups, only 40% of the assistance has gone to girls (though this has risen to 45% since 1996). This is a function of differential school attendance rates in primary school; some of this is cultural and some reflects the walking distance from village to school (e.g. Akikanda to Pararoa, see Volume 2).

Students from villages other than Nauti and from families living in town have actually done quite well. From 1-2 students in Grade 10 or higher, 1992-95, and 2-6 students 1996-98, the last two years has seen this number go up to 23 and 24 students. There are Watut students now being supported in pastoral, vocational, teacher or technical training, and university.<sup>26</sup>

The villages of Kwembu and Winima have fared well by comparison. One Kwembu student, but no less than six Winima students are at university in 2000.<sup>27</sup> Kwembu has received somewhat less assistance than Winima. It is probable that Kwembu students have taken all the places they could have done; the low uptake of funds is because there have been fewer of them. Still, Winima children have done very well indeed and it is likely that the drop-out rate at Grade 6 is slight.

<sup>26</sup> In 2000: Janet Bill, UPNG, Psychology; Simon Joseph, UPNG, Science; Tremba Joseph, Unitech, Social Science.

<sup>27</sup> In 2000: Komai Sau, Unitech, Mining Engineering; Isidor Sau, Vudal, Agriculture; Henry Kiasi, Unitech, Lands and Surveying; Stella Kiasi, Unitech, Science; Kila Mauri, Unitech, Accounting; Wendy Jerome, UNPG, Law; Michael Venno.

	Village			Town			Grand Total
	A	B	Total	A	B	Total	
<b>Kwembu</b>							
Simani	2615	1173	3788	653	198	851	4638
Kazibu	775	75	850				850
Kongawe	890		890				890
Paro	175		175				175
<b>Subtotal</b>	<b>4455</b>	<b>1248</b>	<b>5703</b>	<b>653</b>	<b>198</b>	<b>851</b>	<b>6553</b>
<b>Winima</b>							
Kayoge	2715	683	3398	2263		2263	5660
Simani		550	550	5245	1563	6808	7358
Igulu	20	305	325	575		575	900
Kongawe	1145		1145				1145
Paro	1110		1110				1110
<b>Subtotal</b>	<b>4990</b>	<b>1538</b>	<b>6528</b>	<b>8083</b>	<b>1563</b>	<b>9645</b>	<b>16,173</b>
<b>Nauti</b>							
Yatavo	178	3288	3466	1485	225	1710	5176
Qavaingo	2328	2022	4350	2049	2511	4560	8910
Yandiyamango	1449	3879	5328	408	7250	7658	12,985
<b>Subtotal</b>	<b>3954</b>	<b>9189</b>	<b>13,144</b>	<b>3941</b>	<b>9986</b>	<b>13,928</b>	<b>27,071</b>
<b>Total</b>	<b>13,399</b>	<b>11,974</b>	<b>25,374</b>	<b>12,676</b>	<b>11,747</b>	<b>24,423</b>	<b>49,797</b>

**Table 13 Education assistance by subgroups, rural-urban residents, Kina, 1989-2000.**

Notes: A = landowners, B = 'supporters'. Sources: CRA, AGF, MCG files. Excludes RGC assistance. K250 included in Table 12 could not be classified.

Against this, the fact remains that Nauti-resident 'Nauti' landowners are no further forward than they were in 1988.

A new difficulty that all the villages face is that the national government has altered the basis of funding for post-primary education since 1988. High school and college fees were once in the region of K150-K250 per year, but are now as high as K750; university fees did not exist in 1988, but now start at K1000 and go much higher if students fail to achieve good marks. Even with the company paying half, it will difficult for parents to get their children into the kinds of graduate positions that the company already has on its books—all the present graduate recruits (they are all of 'other PNG' origins) passed through university during the period of Natschol support.

#### *Community service budgets*

One of the agreements instigated an annual Community Service budget of K2500 per village from 1992. Company files show how this was spent in the Watut villages.

The first meetings of village budget committees were held in December 1992. At Nauti, the Yatavo group decided to allocate K600 to a women's group, K540 for exercise books and writing materials for a Hamtai Bible Church vernacular literacy school, K300 to a man whose house had burnt down, while the rest would be used for general expenses. At Minava, the women bought Singer sewing machines and sewing materials; the men

bought coffee pulpers, a wheel barrow, spades and grass knives. At Akikanda and Yokua, the women bought Singer sewing machines and a set of numbered sports tops; the men bought a lawnmower, spraying equipment and spades. Allocations were made to youth to buy items like soccer balls and basketballs.



**Figure 11 Stihl chainsaw and rig purchased at Minava with village budget funds in 1994-95.**

But by 1995, the shortcomings of village decision-making become apparent. While the 1992 budget was broken down into sectors at Nauti, that for 1994-95 shows a breakdown into eleven families and a Lutheran Youth Group. The requests include: seven coffee pulpers, three sewing machines, two bales of second hand clothing, two gold boxes, rolls of fencing wire, gramoxone, and day-old chicks. Quotations in the files show that this would have come to about twice the actual budget, not including the youth's requests for three electric guitars, a keyboard and an amplifier. In the end all the Nauti village budget for 1994 was spent on nine coffee pulpers; that for 1995 was used on chicken projects. This difficulties were repeated at other villages. At Minava, the whole of 1994 and 1995's allocations went on a Stihl chainsaw, fuel and parts (Figure 11).

Thus after an initial burst of enthusiasm for standard social development categories, the villagers soon became dissatisfied with the process of sitting down to translate them into deliverable items. Delayed meetings, disputes between spokesmen and villagers and other sources of prevarication led to money being carried over into the next year, complications with advances, expenditure on youth activities not in the budget, requests to pay vehicle servicing, and so on.

The Minava chainsaw was probably the most expensive item purchased at any of the Watut or Biangai villages. The intention was for villagers to able to mill, on a small scale, the abundant Hooped Pine stands in the bush near Minava both for sale and to make planks and frames to improve village houses. A skilled operator from Bulolo was hired by CRA to train villagers in its operation, and I witnessed a demonstration in 1995. But after a short time, interest in milling timber waned and the saw was rented out to men at another village. It broke down shortly after this and, I think, never served any productive use at Minava.



### *Roofing sheets*

An early form of assistance to villagers was to start a programme of giving out roofing sheets. A standard set was twenty-two 12ft sheets, together with ridge caps, gutters and small tanks. The total number of sets distributed was 154; all landowner families at the main villages now have iron roofed housing and some have tank water.

The programme is of particular interest because of the way in which the 'Nauti' allocations were spread out over a much wider network of kin than just live at Nauti, Akikanda, Yokua and Minava. (An analysis of the distribution is given in Volume 2.)

### *'Goodwill money'*

The village budgets ceased after 1996 with the departure of CRA, who decided to offer the five villages what it called an 'exit programme' valued at K200,000 to be administered jointly by the company (i.e. after its sale to the next operator) and the Morobe Provincial Administration; this is termed the 'Goodwill Money'. The thinking behind it was explained in the preamble to the Memorandum of Understanding that set out its terms:

... with CRA's departure from Hidden Valley it is considered appropriate that an exit programme should be put in place for two reasons. The first is to accelerate projects which would have been done in the future and secondly, by doing these projects and activities, CRA will be leaving behind projects which will be of lasting benefit to the people and creating goodwill in Morobe Province where CRA still has a presence (CRA Minerals and others 1997: 2).

The projects intended to have been set up with this money have not eventuated, for various reasons (see Volume 2), but following AGF's short tenure, MCG under Aurora re-started a programme of village budgets in 1999. The new village budgets have essentially taken the place of the deferred 'goodwill' projects.

### *Health programmes*

A programme of joint village health patrols, run in conjunction with the Bulolo Health Centre was started in 1992, initially to off-road villages in the Watut area, and continues today in a modified form. Landowners at or near Wau are also able to use the company's Wau clinic. The history and effectiveness of the company's health efforts are investigated in Volume 2. The value of this programme is greater than its cost, most of which has been borne in kind, e.g. use of company vehicles and staff time.

### *Business opportunities*

The company started a Business Development section and appointed a Business Development Superintendent, Mr Lawrence Sipala, in 1998. A landowner umbrella company, Ravenpol No 70 Pty Ltd, has now been set up with Mr Sipala's help, who also provides an MYOB bookkeeping service for it. Ravenpol's two main activities (in 2001) are running a Boral Gas agency from premises in Wau and buying vegetables from Kwembu and Winima once a week, paying for the hire of Mr Rex Mauri's car to bring the vegetables to Wau. During MCG's drilling programme, Ravenpol also supplied dry goods to the Hidden Valley camp. The company has no employees and has not paid a dividend yet.

Details of this section's work is given elsewhere, in its Business Development Plan.

## **Lessons learned: mine life employment and employability**

Many lessons can be drawn from the above. The principal benefit during exploration has been employment, but the employability of different groups, and of women as against men, remains problematic. This gives a pointer to what will happen during the mine life, if it does not in fact replicate it exactly.

### *Employment*

On the one hand, employment is the ‘benefit’ that has the greatest potential to bring about the kinds of development that landowners have consistently said they seek (above, p. 8); on the other, a failure of the disadvantaged groups to gain employment has the potential to be the biggest source of frustration and could spark protests.

It is instructive to re-examine what Jackson said about this in 1988. Although he had no data for Nauti, he was well aware of the ‘generally low level of average education among the Watut’ and knew that the number of skilled persons was ‘very limited’. He was cautious in his recommendations, saying that ‘if HVG’s Development Agreement specifies it’, the participation of landowners in the workforce would require ‘a certain degree of training effort’ (Jackson 1988: 55-56).

A decision to proceed to mining was not taken in 1988, disappointing the landowners. But it gave them the unusual benefit of more than a decade of preparation in which to raise their level of education. This has succeeded very well for the following groups: Kwembu and Winima, Nauti ‘supporters’, Nautis living in or near town. It has failed for Nauti landowners resident at Nauti and also Watut girls have been less able to participate than Watut boys.

I will deal with these issues together. Landowner negotiators will require specific undertakings in respect of employment to be written into the project agreements (as they have done in respect of the exploration period). These will emphasise mathematical equality between the three court parties in ratio 50:25:25, and local hire at the expense of recruits from other parts of Papua New Guinea.<sup>28</sup>

The problem is that it will become increasingly difficult to implement such agreements as workforce needs turn increasingly towards skills and technical qualifications. I suggest the company’s response ought to lie in three areas. The first is in an accelerated training regime. (Details of training proposals and workforce requirements are found elsewhere in the Feasibility Study.)

### *Education and training*

The company’s second response should be to affirm its general commitment to providing education assistance to the landowner communities, but, in doing this it should to act to iron out inequities arising under the present arrangements (see *Recommendation 8*).

I refer to the following specific inequities:

- lack of progress at Nauti village arising from its ‘remote rural’ location;
- gender imbalance across the Watut villages generally.

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<sup>28</sup> Oddly, it is unlikely that landowners would be interested in a specific ratio of expatriate to Papua New Guineans in technical areas (e.g. geology), although this may be a prime objective of national policies. Expatriates, obviously, cannot be hired, or diverted to perform, jobs that are clearly classified for national employees.

Also:

- the increasing burden on parents of the government fee increases for students in the later grades of high school and at university.

The problem of Nauti education is not one that can be solved without a school at Nauti. A feeder school will not be sufficient. Efforts to bring a school to Nauti to date have centred on vernacular literacy. A Hamtai Bible Church teacher has helped children at Nauti from time to time (a village budget was used to buy books and pencils), but none is doing this now. In the implementation of the latest education plan, an Elementary School should have opened at Menhi in 2000, with a Hamtai teacher, and an elementary class should have been added to Pararoa. But disorganisation and lack of budget postponed this to 2001. The original 2000 plan posited an Elementary School for Nauti after this—which would have meant 2002 at the earliest—but the latest revision has now dropped Nauti altogether.

The weakness of relying on the government's efforts is that plans are constantly put off until another year. And at Nauti, what will happen to children who graduate from Elementary School (after Grade 1 or Grade 2)? They will still be an impossible 12km from Yokua<sup>29</sup> where they would be expected to continue. A Community School is required for Nauti itself. There are approximately 60 children at Nauti aged 7-14 years, plus further children at nearby settlements (see *Recommendation 9*).

Parents may need to be encouraged or challenged to send Watut girls to school along with boys; however, practical solutions to the problems of distance to school, boarding etc will also be needed.

In respect of education subsidies, there is a limit in what can be achieved in producing high school graduates if those equipped to go on to technical or higher education cannot complete their courses because of financial problems. The project requires graduates of more than high school level in many areas and, even if recipients do not always return to employment, the extra expense will be repaid many times over in defusing the general feeling of frustration that landowners have when they are bypassed in favour of other Papua New Guineans for technical or professional positions. It should also be borne in mind that Papua New Guinea families are generally quite large and the burden of university and high school fees can cause genuine hardship (see *Recommendation 10*).

The predominance of males in the workforce brings other problems. When village women lose the assistance of men in preparing gardens, they are still expected to feed (and probably clothe) their families from the fruits of subsistence agriculture. Thus the status of women can actually worsen when village life is 'improved' through male employment. A mitigating factor at Wau and Bulolo is that, although regular wage employment may be new to those with poor education, both the poorly and the well educated have experience with forms of cash-earning work, such as alluvial mining and forestry, that have to be undertaken away from the village.

The company's response should be to consult the views of women in respect of their desires for employment, and to look closely at the special employment issues for women. Child care requirements and daily commuting time are particularly relevant. For example, women from Kwembu might easily live in the village and work in Wau, but Winima

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<sup>29</sup> Note that Yokua has its own problems and may be unsuitable anyway, as was demonstrated over New Year 2000-2001 when villagers demolished a classroom.

women would find the commuting time too great if they were unable to stay in town. Nauti women might think of employment as laundry workers at the company's single quarters—but where would they stay if also trying to care for their village families? (*Recommendation 11.*)

### *Small business*

The third way for the company to respond to difficulties in implementing a landowner employment policy is to think of ways to provide alternatives to permanent employment with the company. In reality, the landowner villages are so small that the world's best training programme could not produce skilled workers from them in sufficient numbers to satisfy the company's needs. Many people classed as 'village elders' are unlikely to seek employment and, if they did, they would have to absent themselves too frequently to attend meetings to make this a worthwhile option. Some people in this category will be able to benefit from mine-related business spin-offs, but others will not. Women may not seek formal employment, but may be very interested in small projects.

Thought should therefore be given to types of work that might ordinarily be done by the company's own labourers or field staff, but which could be given out to small landowner contractors. These might include line cutting, environment rehabilitation, culvert maintenance and the like. Similarly, non-mine related informal business activities like vegetable sales, scone baking, sewing, village poultry and many more should be encouraged (see *Recommendation 12*).

I am well aware of the nuisance cost of administering small maintenance contracts, but I make this recommendation for the specific objectives discussed.

### *Village projects*

The experience of the 'goodwill projects' given by CRA on its departure from Wau is very instructive. This report will emphasise (e.g. pp. 60, 62) the need to provide benefits in kind, in exactly the same manner as did the goodwill MOU, but I warn here of the need not to underestimate the extreme difficulty of implementing 'projects which will be of lasting benefit to the people' (CRA Minerals and others 1997: 2).

Most of the CRA money was, I say wisely, tied to community projects, and the expenditure of money required the signature of company and Morobe Provincial Administration representatives. Unfortunately, it then proved beyond both the company's existing Liaison capabilities and the Morobe Provincial Administration's ability to oversee the technical planning of each mooted project—road maintenance, mini-hydro, water supply etc—and to hold the necessary exhaustive consultations at village level.

In fact the full-time attention of a technically experienced person was needed, and will be needed for any projects that MCG may devise in the future. This should be factored into all extension or development work programme upon conception; under no circumstances should existing staff, whether in the company's workshop, or in its future engineering sections, or in Liaison, be tasked with implementing village projects in their 'spare time' (see *Recommendation 16*).

## **Cash income streams during the mine life**

### *Special support grant and Tax Credit Scheme*

Calculated at 1% of production at Hidden Valley, the Morobe Provincial Administration should obtain a Special Support Grant from the national government once operations begin.

If the company makes a taxable profit, it can offset its tax liability by an equivalent expenditure on approved development schemes. Both can be classed as ‘income’ streams, by virtue of the fact that they amount to funds that are spent in the vicinity of the project.

Although SSG money is the MPA’s to dispose of, in fact it falls into a spending category that local area stakeholders, including the company, can exert a degree of leverage on. For example, if the company commits Tax Credit Scheme money to a large item of infrastructure like a bridge or a health centre refurbishment, there is no reason why it could not seek a matching contribution of SSG.

### *Provincial government royalty income*

At the base level production and gold prices given on p. 2, total royalty income from the project should be K5 million a year. At the 80% rate allowed by the *Mining Act*, the Morobe Provincial Administration could expect a royalty income of K4 million annually. However, it has been then typical outcome of recent Development Forums that the provincial royalty component is salami-sliced to make new allocations of royalty for:

- future generations fund (Porgera: 10%);
- grants to local development authorities (Porgera: 5%; Lihir: 30%);
- grants to Local Level Governments (Ramu: 4%);
- non-SML landowners (Ramu: 35%).<sup>30</sup>

At Hidden Valley, the small size of the project—and thus the smaller size of alternative income streams in the District—will put additional pressure on the MPA to surrender parts of its royalty percentage to local interests. On the Lihir model, it might reduce its own receipts to 50% and release slices of 10%, or K500,000 (of the K5 million total royalty), to each of the three Local Level Governments in the project area (Wau Rural Council, Watut Council and Wau-Bulolo Town Authority).

Whatever happens, it is safe to say that the MPA will *not* find it politically achievable to bolt the door on its allowed 80% stake in royalty.

The implications for the project are that royalty components released to Local Level Governments will require planning capabilities and levels of management that they do not presently possess. Also, because the construction of mine facilities will involve creating infrastructure in the same area, it is inevitable that the plans and objectives of both will intersect.

This means that there is ample scope during Forum negotiations for the company to propose collaboration on some projects.

Not all suggestions need involve primarily financial commitment. For example, two MPA positions in the Bulolo District are filled by Australian volunteers who carry out planning

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<sup>30</sup> Ramu Nickel Project (1999). This project is the first in which provincial government has surrendered royalty both to non-SML landowners (in the pipeline corridor) and LLGs.

and and special project tasks, a practice extending back many years.<sup>31</sup> The company might not wish to get involved directly, but it might wish to help make it possible for similar recruitment to occur to the Wau Rural and Watut Councils; housing and recreation fares are obvious limiting factors in attracting competent applicants to positions paid at national wage levels.

#### *Landowner royalty income*

At the 20% rate guaranteed by the *Mining Act*, landowners can expect a minimum royalty income of K1 million annually. Given that the income is derived from the SML, and that the existing 50:25:25 shared ownership arrangements are continued, ‘Nauti’ can expect K500,000 annually and Kwembu and Winima K250,000 each.

If ‘Nauti’ income continues to be divided using the 20:10:10:10 formula, the Yatavo will receive K200,000, the Qavaingo, K100,000, the Yandiyamango, K100,000, and ‘Yakaya’, K100,000 annually.

Landowners are not presently aware of these numbers.

At some past projects, though with bigger incomes, landowners have surrendered part of their royalty for:

- future generations fund (Porgera: 10%);
- grants to local development authorities (Porgera: 2%);<sup>32</sup>

On the other hand, the most recent negotiations gave SML landowners a royalty hike to 30% (Ramu Nickel Project 1999).

Although those more aware among the Hidden Valley landowners may be starting to discuss their options in these specific terms, the broad membership has very little idea of the complexity involved. Paradoxically, division into percentages is a very familiar concept because of the prevalence of royalty and tribute deals around Wau and Bulolo—and the Provincial Land Court case is itself framed in percentage terms. But this familiarity has not extended to an intimacy with either the *Mining Act* or the agreements at other projects.

In 1987, shortly after the Provincial Land Court case, Ben Joseph took the minutes of a landowner meeting:

I pushed aside some of their thoughts of “Getting Richer” with a 50-50 profit share with the mining operation saying, that will not be possible and it’s just not on (Ben Joseph 4 July 1987).

I heard this same idea from a village spokesman in 1997—*mipela laik 50-50 wantaim kampani* (‘we want to go 50-50 with the company’). From this I understood that he wanted the company to share the income from gold sales 50-50 with the landowners. When I mentioned in 1997 the fact that royalty would have to be shared with the provincial government, this was met with incredulity.

It has not been possible to make any lasting alteration to these viewpoints when discussing them in abstract terms (see *Recommendation 39*).

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<sup>31</sup> In 2000-2001 these are Mr Nick Mann, District Planner, and Ms Elise Coghlan, Business Development Officer.

<sup>32</sup> Porgera landowners originally received only 8% of (a much bigger) royalty in cash.

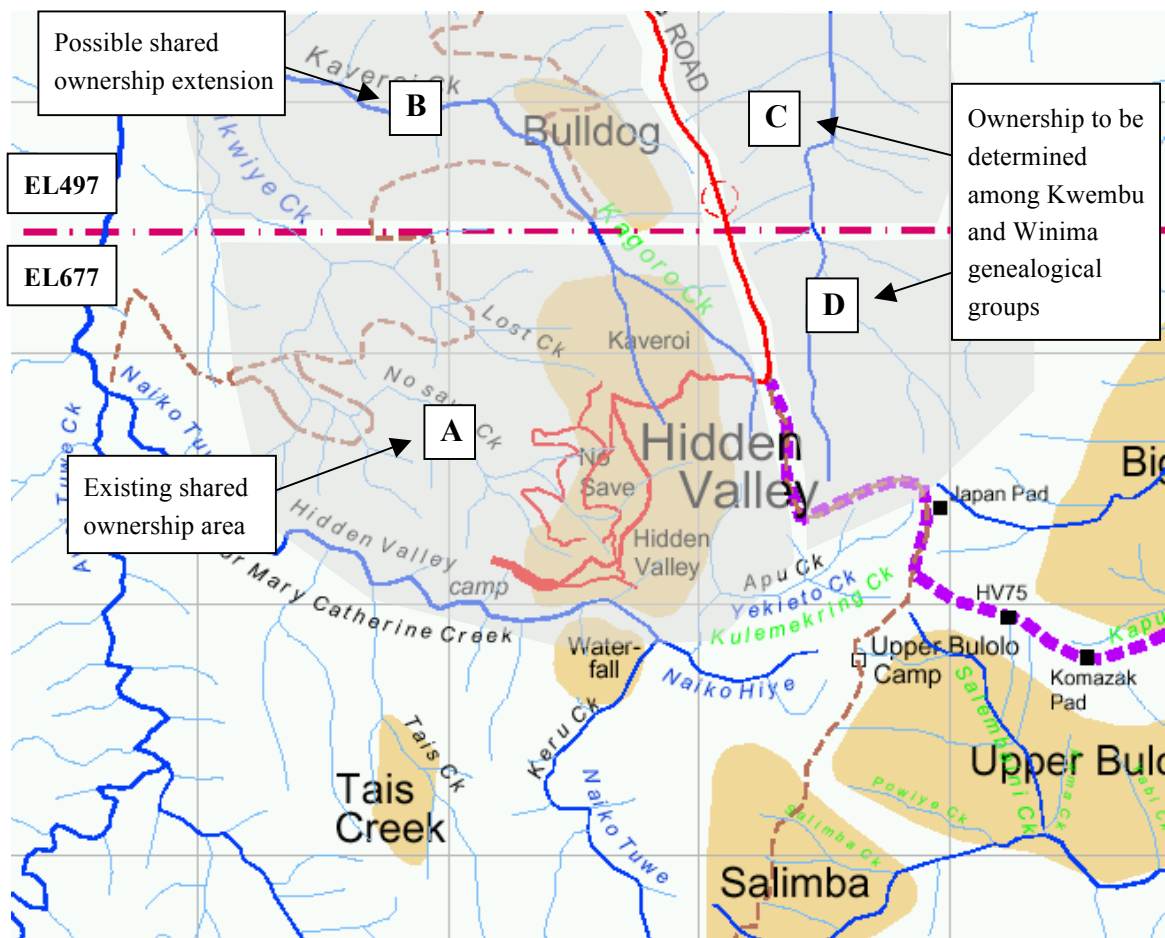
*SML configuration in relation to the area of shared ownership*

Until now, landowners have assumed that ‘Hidden Valley’ refers to the area of shared ownership and therefore that all benefits accruing to them will be split in the ratio 50:25:25. They have not made the connection at this point that current proposals to locate waste dumps north of the EL497-EL677 boundary will mean that various kinds of income will originate outside the area of shared ownership as it is presently configured.

A crucial problem is that royalty has historically been considered to be derived from all parts of an SML equally (that is, regardless of where the pit is located within the SML).

This means that if the SML boundary is extended to enclose waste dumps outside the area of shared ownership, it could result in the diversion of royalty payments into private accounts outside the 50:25:25 formula.

Figure 12 shows a schematic division of land needed for project facilities into four parts. The area marked as ‘A’ is inside the area of shared ownership. ‘B’ is land inside EL497 to the west of the Bulolo-Watut Divide; ownership is nominally with the Yatavo lineage at Nauti village, but in reality has not been properly tested in court (see p. 25). ‘C’ and ‘D’ are to the east of the Divide (Big Wau and Kauzarewe areas) and up to this point have been the subject of loose arrangements among Kwembu and Winima families.



**Figure 12 Land in the vicinity of Hidden Valley in relation to ownership.**

Notes: north at the top of page, grid is in kilometre squares.

It is possible that an extension northwards could be made of the area of shared ownership into area 'B', if areas 'C' and 'D' were also included in a tie-in of some nature. On other grounds, ownership of areas 'C' and 'D' is likely to be strongly asserted by the predominantly Kwembu families who have been dealing with the Big Wau prospect to date. Their only incentive to relinquish an exclusive hold on these areas would be the recognition by Nauti leaders of their traditional hunting and collecting rights in 'B'. Negotiations to discover what each of various parties are willing to accept must be held once the configuration of the leases is settled (see *Recommendation 27*).

While no great expectations should be held for the prospects of being able to negotiate an extension to the area of shared ownership, given the glacial pace of negotiated compromises in recent years, on no account should the SML be extended into unshared land because of the implications for royalty sharing (see *Recommendation 28*).

A related problem exists in relation to the distribution of one-off compensation and annual lease payments (see below).

#### *Bush clearance for project facilities*

Compensation for bush clearance is based on tree counts and the values for different types of timber. Two methods are used in the industry: (i) actual tree counts on the land to be cleared and (b) per hectare rates agreed in advance, based on counts in sample plots. The current compensation practice at Hidden Valley breaks trees down into 'small', 'medium' and 'mature' and values them according to the 'semi-hardwood' category in Table 14; the 'actual tree count' method is used.

Site	Small	Medium	Mature
Hardwood (all species)	K5.00	K9.00	K18.00
Semi-hardwood (all species)	K3.00	K6.00	K12.00
Lesser known timber species	K1.50	K3.50	K7.50
All other trees	K0.50	K1.50	K3.00
Pine tree	K5.00	K20.00	K45.00

**Table 14 Valuer-General's recommended prices for forest trees.**

'Small' = 6-15cm diameter at breast height; 'Medium' = 15-60cm diameter; 'Large' = greater than 60cm diameter.

Source: Valuer-General 2000: Section 3.4.

To show how the sample plot method can be used to derive a per hectare rate, Table 15 shows the numbers of trees counted by G. Vatasan and his team at six sample localities near Hidden Valley and Hamata, counting all trees over 10cm diameter. The average number of trees counted in the plots was 473/hectare. On the basis of Vatasan's (pers. comm.) breakdown into the three size categories, the one-off *tree component* of compensation for total clearance of bush can be calculated.

I have adopted two models to show the sensitivity to price variations that may arise during Compensation Agreement negotiations. In Model A, all trees are paid at the semi-hardwood rate (the rates that have been adopted for current exploration period payments); the trees are valued at K3,787. In Model B, 'small' and 'medium' trees are paid at the semi-hardwood rate, but 'large' trees are promoted to hardwood status; now the valuation is K4,841.

Note that this does not include other compensatable things in the bush like vines, medicinal plants and barks, 'salt leaves' and the like. Note also that Vatasan's counts



underrepresent ‘small’ trees because his team began counting at 10cm, not the 6cm stipulated by the Valuer-General.

Nonetheless, the result is comparable to what some other developers have paid in recent years. Chevron Niugini paid K3752/hectare in 1998 for ‘alpine rainforest (>1500m)’,<sup>33</sup> K2415 for ‘mid-montane forest (500-1500m)’ and K1632 for lowland forest (<500m). Misima Mines paid K2554/hectare in 1998 for ‘dense bush’ (Filer et al. 2000: Appendix 8).

Site	Altitude	Area	Trees/ha*	‘Small’	‘Medium’	‘Large’	Model A	Model B
HVA	2440m	0.53 ha	343	152.8	171.7	18.9	<b>K2,921</b>	<b>K3,838</b>
HVB	2100m	0.37 ha	503	210.8	259.5	32.4	<b>K4,184</b>	<b>K5,449</b>
HVC	2100m	0.15 ha	807	353.3	360.0	93.3	<b>K6,680</b>	<b>K8,800</b>
UWA	2000m	0.60 ha	382	103.3	253.3	25.0	<b>K2,835</b>	<b>K3,455</b>
UWB	2000m	0.80 ha	458	138.8	291.3	27.5	<b>K3,495</b>	<b>K4,328</b>
UWD	2000m	0.45 ha	344	95.6	237.8	11.1	<b>K2,607</b>	<b>K3,180</b>
<b>Mean</b>			<b>473</b>	<b>176</b>	<b>262</b>	<b>35</b>	<b>K3,787</b>	<b>K4,841</b>

**Table 15 Tree count details and compensation assessment projection: tree only valuations per hectare of cleared bush.** Notes: \*Trees = trees >10cm diameter at breast height (1.30m above ground). HVA-HVC located in ‘lower montane forest with Nothofagus’ along Kauzarewe ridge (Aug 2000); UWA-UWD located in ‘lower montane forests with conifers’ near Hamata (Nov 1997). Tree counts from Vatasan 2000 and pers. comm. Models A/B: see text.

But Porgera and Lihir rates have been much higher. The Porgera Joint Venture set a per hectare rate of K13,556 in 1998 for their category of ‘Primary 1 virgin bush – no breaks in canopy’ and K8056 for ‘Secondary 2 – some impact from use by people’ (Filer et al. 2000: Appendix 8). Using individual counts, Lihir paid K12,000 for cultivated land near Putput in 1995-96 and as much as K20,000/hectare for steep forested slopes at the back of the pit area (Filer et al. 2000:98).<sup>34</sup>

It is likely that landowners will insert many qualifications into the Compensation Agreement to cover things like ‘Sites of social & cultural significance’ and ‘Water impacts during construction’, and the categories of ‘hardwood’ and ‘pine’—interpreted as *Araucaria sp.* (Klinkii and Hooped Pine)—may be enforced, whereas they have not been in the past.

A round figure of K4,800/hectare for clearance of all forest categories is currently factored in for estimates (P. Bennett, pers. comm.); K30/hectare is allowed for the clearance of grassland (approximately 3km of the access road passes through open grassland). As current infrastructure plans indicate clearance of some 740 hectares of forest cover and 16 hectares of grassland, total one-off compensation can be estimated at about K3.5 million.

<sup>33</sup> There is no such thing; this must mean ‘lower montane forest’, in other words bush similar to that at Vatasan’s sample localities.

<sup>34</sup> The main reason for the higher rates at these two sites is that small plants like vines and seedlings received valuations which, though very low, contributed heavily to the per hectare cost. At Lihir (F. Wade, pers. comm.), sweet potato mounds were at the rate of one per runner (not one per 6-10 runners as at Porgera), and bamboo was ambiguously written into the compensation schedule so that it was paid per stick not per clump.

As noted above, the sharing of one-off compensation is strongly affected by the final configuration of the mine facilities. The arrangement of the lease boundaries in relation to the area of shared ownership is the crucial factor. The worst case outcome is that a restricted number of Kwembu families will share in the windfall one-off compensation for clearance of waste dump land in the head of Puruwang Creek (the left-hand branch of Big Wau) at the rate of K480,000 per 100 hectares of land required for the dump. This is good fortune indeed for those involved, but is a scenario guaranteed to create severe conflict within the village, and indeed between villagers at Kwembu and Winima. A compounding problem is that one-off compensation will be paid immediately the land is cleared, but royalty income for other families will not be available to them for up to two years. A very likely outcome would be that beneficiary families could not live safely in the community afterwards.

This may sound ominous, but this project differs from the much larger operations elsewhere in PNG where so much more compensation money has been available, and those who missed out in an early round were assured of their share in a later one. The danger at Hidden Valley is that those who miss out at the start will miss out for good (see *Recommendation 29*).

A way out of this could be to re-designate the one-off payments as what might be termed ‘nest egg compensation’. This is an option that would have to be pursued through negotiation and lengthy discussion among the affected groups. What I have in mind here is that the one-off compensation be handled by trustees whose task would be to oversee the dispensing of funds to a worthy community project (a) that everyone can agree on and (b) that can be completed in a one to two year period (see

*Recommendation 37*).

In making this suggestion, I do not mean to deny anyone their entitlement. I invite comparison with the ‘future generations’ and ‘community benefit’ clauses built into some royalty agreements and my intention is that recipients should find the best way of mobilising their money without provoking conflict. It is suggested that ‘nest egg compensation’ could underwrite a housing scheme in the first instance (see *Recommendation 40*).

#### *Annual lease payments*

Land taken up by the leases and the project facilities within them is classified into four categories of disturbance for each of which annual payments are payable; given the suggested rates, this will bring an income of K131,000 annually (Table 16).

The comparative modest rates at which lease payments will accrue means that the scope for social disruption caused by inequities in distribution will not be great.

#### **Other things of ‘community benefit at company cost’ during the mine life**

The basic needs of villagers during the mine life will transform from easily deliverable things to things that become increasingly harder to make good on. By this is not meant the villagers will ‘need’ new things that were out of reach beforehand (such as vehicles, electrification, permanent houses), although this will obviously happen. What I mean is that it will become much harder to achieve the same gains in basic social development indicators—in health, housing, education etc—as has been seen so far on a very modest budget.

Land category		Lost K67.50	Damaged K45.00	Cleared K22.50	SIBD K22.50	Total
<b>SML</b>	<b>Area</b>					
Pit and waste dumps	565 ha	K38,138	K25,425	K12,713	K12,713	K88,988
Roads and buildings	75 ha	-	K3,375	K1,688	K1,688	K6,750
Road margins	50 ha	-	-	K1,125	K1,125	K2,250
Unused bush	1310 ha	-	-	-	K29,475	K29,475
Subtotal	2000 ha					K127,463
<b>SME access road</b>						
Road pavement	36 ha	-	K1,620	K810	K810	K3,240
Road margins	36 ha	-	-	-	K810	K810
Subtotal	72 ha					K4,050
<b>Total</b>	<b>2072 ha</b>					<b>K131,513</b>

**Table 16 SML and SME annual lease payment estimates by land category.**

Notes: SIBD = 'Social inconvenience and bush disturbance'

Source: MCG estimates.

A good example is health. Late in the exploration stage, Kwembu and Winima villagers have access to the inevitably mediocre services of Aid Posts at Kaisenik and Samuna, but are able to get to town easily and can always obtain treatment and medicines at the company clinic. Yet there continue to be unnecessary deaths at these villages and the next steps in improving health are not simple ones at all. (I examine this in Volume 2.)

I have already dealt with Nauti village education. Here too, all the easily taken steps have been taken, and there has still been no improvement.

In some instances, people will be able to escape from the various poverty traps that beset them by changing their own lifestyles—for example by building better houses and by becoming better educated. But in others, *more money will not enable them to escape poverty*. I refer particularly to people in a disadvantaged position—women in general, elderly widows and widowers, adopted children and orphans, second and later wives, long-standing members of Nauti, Kwembu and Winima who are not landowners—but also to principal landowners who will not have the business and life skills to extract maximum benefit from their income. Lastly, the short mine life is a limiting factor in itself.

The story from other mining and petroleum projects is good in parts, but is undeniably one of wastage and lost opportunity. Returning to one of the experiences that led directly to the establishment of community service budgets at Hidden Valley, when landowners at Mt Kare shared about US\$100 million (now over K300 million) in alluvially won gold in one year, 'people had little ... to show for their participation in the gold rush' afterwards (Vail 1995:366). No detectable improvement in living standards was seen in Tari, Paiela or Porgera from this windfall—indeed possibly the opposite when things like prostitution and violence are factored in.

In the oil fields of Southern Highlands—PDL1, Moran, Gobe etc—the returns to village-resident villagers from their royalty and compensation entitlements were recently reported (Koim 2001) to be minuscule because of the intense political activity and vexatious litigation among landowner interest groups. Increasingly, the response of developers has been to set up foundations to take on infrastructure building and social development tasks (e.g. Wissink 2001; Flemming 2001), not because they have not

provided enough resources for these things to occur independently of the company, but because the different agendas of outside forces have acted to thwart conventional attempts to achieve these goals.

Suffice it to say, then, that the implication is that the provision of things of ‘community benefit at company cost’ will and should continue to be important.

*Health: to assist or become an agency?*

In Volume 2, I give an analysis of the company’s health-related efforts to date. In some areas they have been successful; Kwembu and Winima health could probably not be improved further by the same means.

But in other instances, well-intentioned initiatives have failed to deliver measurable benefits. The notable case is the spleen reduction programme in Watut villages; a slight reduction was achieved in children, but spleens actually increased in size in the sample of adults I was able to track between clinic visits.

Landowners will not be able to do anything about this by themselves. In fact, most adult Watuts are so strongly convinced by the existence of *sik bilong Watut*<sup>35</sup> and traditional curses that doom particular villages<sup>36</sup> to extinction, that they actually do not see the connection between their high death rate and treatable illnesses.

Some statistics on Watut health are: 20% of children die between birth and adulthood; more deaths occur in adults between the ages of 20 and 49 years than over the age of 50 years; women aged 20 and 49 years die at twice the rate of men; life expectancy overall is approximately 40 years, but it is poorer than this for females—that is, approximately 20 years worse than the Papua New Guinea average.

This problem is not caused by company actions but the company should be aware that its *future actions* may well get the blame if environmental emissions are not contained as designed or villagers who feel they do not obtain benefits vent their frustrations in a political manner. (It does not matter whether this is fair or not.) Therefore, instead of continuing its health assistance on a voluntary, goodwill basis it is suggested that this is actually built into the project agreements where it can be properly measured as an ‘official’ benefit (see *Recommendation 13*).

Still, things can get more complicated as time goes by. If, say, the company did what I have just advocated but faced a collapse in local public health services one or two years into the project life, what would its response be?

One the one hand, the public health service is not the responsibility of a developer; on the other, the developer possesses managerial skills that the health system does not. OTML found that the solution in the North Fly was to manage the Tabubil Health Centre as an agency, that is to become a contractor paid out of the government health budget to run it.

This is not an ideal situation and the company should probably avoid doing this at Wau.

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<sup>35</sup> *Sik bilong Watut* equates to a belief in *pangga* or ‘sanguma’-type witchcraft.

<sup>36</sup> Wandini and Kaumanga are villages believed to be cursed in this way; whereas Sapanda is pointed out as having always escaped the problem. It is probable that the entire adult population of Nauti was wiped out in epidemic outbreaks of meningitis, pneumonia, whooping cough and other unknown diseases that swept through the Bulolo District in 1946-47 (Horrold 1947); this is attributed to *pangga* and curses.

But an alternative, expressed in the second part of the recommendation, is to seek more robust funding guarantees at the outset. For example, a tri-partite system of funding might be agreed upon whereby the company contributes one third of the cost of a particular programme, the provincial government and landowners agree to designate a percentage of royalty, and the provincial government agrees to add a matching proportion from its SSG income. Lateral thinking is required to bind each party to its commitment, with some sanction or forfeit occurring if they fail to meet it.

Lastly, it is important to be sure that whatever contribution is made, it does what it is meant to do effectively; professional management inputs, and monitoring and reporting are essential (see *Recommendation 14* see *Recommendation 15*).

### *Housing improvement*

The programme of roofing iron distribution in the 1990s proved an effective and widely welcomed benefit. Though the scope for continuing this is limited for obvious reasons, housing improvement remains one of the keys to an objectively better lifestyle. For example, a critical step toward better environmental health is through better housing; as noted, Kwembu and Winima health probably could not be improved further by better doctoring or more medicine; better housing, though, could do so.

There are other obvious benefits like the ability for children to do homework at night if village houses can be connected to power (see *Recommendation 17*).

I suggest that it is undesirable to propose a housing scheme based on standard kit homes, even though the Bulolo-based Golden Pine company is located nearby and is the biggest supplier in Papua New Guinea. Apart from the cost being steep for villagers, even with the help of their new incomes, the problem of inequality of distribution would make this undesirable. The best solution is probably a scheme based on the provision of materials that landowners can put into homes of their own design and in the locations they choose, but with company assistance in the form of design and costing, carpenters and a building supervisor.

An illustration of the results is provided by Leklu village, near the former Golden Pine sawmill (Figure 13). Houses here are properly framed, have louvred and flyscreened windows, and have timber-clad walling. A demonstration house, of very similar construction, but entirely made from walkabout sawmill timber can also be inspected at Wandumi village. Houses like this can be built for under K10,000, excluding guttering and water tanks, sewerage, and labour (Table 17).



**Figure 13 House at Leklu built with material supplied by the former Golden Pine sawmill near the village.**

I gave the suggestion above that ‘nest egg compensation’ from one-off compensation payments for land clearance could be used as seed capital for a housing scheme (p. 57, see *Recommendation 40*).

Item	Cost
Roofing sheets	K900
Roof sawn timber (50x50, 100x50, 150x75 etc)	K1500
Plywood flooring and verandah decking	K1000
Interior plywood walling	K1000
Wall cladding	K4000
Louvre frames, hardware, fittings	K600
<b>Total</b>	<b>K9000</b>

**Table 17 Approximate cost of low cost timber-framed house in 2001.**

Source: Steamship’s Hardware & Nakokai Pty quotes.

### *Village electrification*

Leklu has the added benefit of village electrification; presumably householders are responsible for bills through Elcom in the usual way. In the Wau Valley, power lines already extend to within a few hundred metres of the three Kwembu settlements. When the Hidden Valley access road is constructed, and power follows it to the plant site, it will pass 2.4km WNW of Winima at the closest point. In the case of these two villages, the option of electrification is not a hypothetical desire; villagers will assume that this is what will happen (see *Recommendation 18*).

It is technically feasible for Elcom to extend power up Slate Creek in the future, perhaps as far as Pararoa School, but the cost bringing power lines to Nauti, Minava, Yokua and Akikanda, compared with the many more pressing needs of these villages, means that this form of electrification is impractical for the moment. Mini-hydro schemes were

budgetted for in CRA's goodwill money but have never been the subject of a feasibility study. Solar panels have been used successfully at other projects (e.g. by the Fly River Development Trust), but have a limited use beyond street lighting and water pumping. Unfortunately, it is also well-known that solar panels are susceptible to vandalism in Papua New Guinea and this limits their practicality in situations where maintenance capabilities are poor.

As a matter of equity, ideas for alternate sources of power should be evaluated for these villages (see *Recommendation 19*).

#### *Water supply and sanitation*

Water supply and sanitation are closely linked to housing improvement. Tanks attached to iron roofed houses are the most maintainable, because they are looked after by individual owners, but dry spells exhaust village tanks in a few days. In consequence, piped supplies are needed in all villages. Because mining activities will take place in the upper parts of three river catchments, the provision of piped supplies should be accepted as a company responsibility (see *Recommendation 20*).

Few villages across Papua New Guinea have sanitation other than pit toilets; some actually have cultural injunctions against defaecation anywhere near the village let alone in toilets. Everywhere, maintenance and hygiene is a problem. In consequence, spreading the message of hygiene is best left to health patrols and extension work targetted at mothers. Nonetheless, new designs of septic tank have come onto the market recently and householders who want to install them should be encouraged (see *Recommendation 21*).

### **Setting objectives for the benefits package and balancing what the Forum delivers**

#### *Cash distribution problems*

From the details already given, it is clear that many years after they won access benefits from Hidden Valley, the three named court parties have not found it easy to make decisions about their internal sharing arrangements. Both Biangai and Watut have fallen back on the names of long dead ancestors to partition their groups into smaller parts so that compensation money can be broken up for distribution. Unfortunately, they have failed to establish a way of properly dealing with sums of money that will be an order of magnitude bigger than what they are used to.

Given the recent history of payments to the same groups (see Volume 2), these numbers represent between a 25-fold and a 65-fold increase in cash income to distribute. The most serious difficulty is that, while in 2000 a breakdown of equal shares was made among some subgroups, the numbers of people in them was very different. Thus if the method of distribution used in 2000 were followed, the biggest individual shares would go to the Qavaingo Pupiyo lineage (see Volume 2), who would share K16,600 among five men, and the smallest individual shares would go to the men of Yandiyamango, who would have to divide up K19,960 among the 62 of them—and they would still have 131 younger or more distant relatives to have to think about.

The proposed solution to this problem is to harness custom and to continue to work genealogically, but to replace the current primary divisions at 'greatgrandfather' level with a new breakdown into smaller families. The objective would be to equalise the spread of benefits on a per capita basis, and to make cheques out to individual family heads. The present loose collaboration between the company and government project

liaison staff on these matters should re-energised by the setting out of more specific objectives (see *Recommendation 41*).

Technical means are also at hand to draw up lists of propose beneficiary families and their members, in the form of the Community Express database already on the company's computer network (see *Recommendation 42*).

*Balancing benefits in cash with benefits in kind at the Forum*

The Chamber of Mining and Petroleum's consultants opened the question of formally including payments in kind in compensation agreements. Placing the criterion of equitable distribution foremost, as I have done here, they included among their recommendations the following:

- that is better to compensate people with payments in kind than payments in cash;
- that it is better to compensate a group of people by providing them with public goods than by distributing private goods among them, especially if the private goods would be distributed unequally between individuals or families (Filer, Henton and Jackson 2000:121; cf. Filer and Jackson 1989:26)

Both things are to say that the denominators in second form of the equation on p. 39, the measures of satisfaction about relativities and about how compensation is delivered, are the foremost issues.

On their second point, I would counter that *that it is better to distribute private goods if these can be distributed equally*. The distribution of roofing iron among Hidden Valley landowners is proof that satisfactory outcomes can be achieved with certain categories of goods. I have added housing improvement, electrification, water supply and sanitation to this, delivered by some method of financing that makes the best use of contributions from various quarters, including a proportion of cash incomes.

I concur with their general preference for benefits in kind, but qualify this by saying that (a) at Wau people both want and need cash incomes and have participated in the cash economy for several generations, but (b) that, where cash incomes will become unequal, it is better to provide benefits in kind.

They continue:

- that compensation packages should be explicitly directed towards the achievement of 'specific targets', meaning certain standards of living (or service provision) which are established by reference to relevant provincial or national norms (Filer, Henton and Jackson 2000:121).

I have previously been able to show that differentials in benefit incomes at different projects came about because of the unwittingly different configurations of leases, compensation procedures and royalty calculations that prevailed (Burton 1997b). Either there was no Forum (Ok Tedi) or matters to do with compensation *per se* were not included in the Forum (Porgera). Only at Lihir were compensation matters brought into the Forum talks (Filer, Henton and Jackson 2000:122), but in this case the main agenda was that of achieving the maximum degree of political control for landowners in the context of a long mine-life and a very large project.

The main agenda for Hidden Valley's Forum should be the achievement of maximum equality in the delivery of benefits, within each category of people fairly entitled to receive them. I suggest this can be accomplished by balancing the various available benefit streams through negotiation. There is ample room to manoeuvre in at least three areas.



First, as I have noted above, the grant-like income streams—SSG, some parts of royalty, and Tax Credit Scheme funds—can be the subject of discussions for joint funding agreements among the company, the Local Level Government, the Morobe Provincial Administration and the landowners. The agreements could apply to local infrastructure and its maintenance, or social services of any kind.

Second, in the way the company applies for its mixture of SML, LMP and SME tenements, especial consideration can be taken to think through and model the income distribution that will result.

Third, the mix of benefits in cash to benefits in kind is amenable to adjustment through negotiation; large lump sums of cash are particularly to be avoided if negotiation can enable the transference of the same amounts into properly managed schemes that are inherently able to provide a fairer distribution of benefits in kind. (Management costs should not be deducted from the income streams in order to accomplish this.)

This theme is amplified in my conclusions (see *Recommendation 38*).

## CHAPTER 5

### ASSESSMENT OF SOCIAL AND POLITICAL RISKS

The area of social and political risk analysis is comparatively new to Papua New Guinea. Content mentioning the word ‘risk’ is hard to find in most of the social impact studies conducted prior to the closure of the Panguna mine such as at Ok Tedi (Jackson, Emerson and Welsh 1980), Porgera (McKillop et al. 1987), and Hidden Valley (Jackson 1988). An exception is the Lihir SEIS (Filer and Jackson 1986, 1989). After the closure of Panguna, the Lihir SEIS was revised and the additions reflect a significantly increased amount of attention of the problem of project risk, conceived in the form of a 15 year ‘timebomb’ after which internal social stresses would be expressed in civil disruption.

On the other hand, individual managers know very well what it is to be beset by social and political risk factors, and they have taken steps to deal with them. The problem here is that these steps have, indeed, been individual and thereby inherently risky in themselves. Their actions may become part of company folklore, but this may not be the best means of creating company policies for the long term.

The first objective of this chapter is to show what social and political risk are like for a mining project in PNG, how they have changed over time, and what can be done to moderate them.

#### **What are social and political risks?**

In the context of trying to develop any kind of project in an uncertain environment, social and political risks probably fall into three categories:

1. Risks stemming from the external environment.
2. Risks stemming from poor management practices;
3. Risks stemming from a mistaken outlook on present situations;

When questioned, working managers tend to defend current practices and to rank external factors as the most critical. For example, ‘We know what we are doing and the company has hired the best people, but we could run twice as efficiently, if it wasn’t for X’, where ‘X’ could be ‘the freight doesn’t arrive on time’, ‘it takes three years to transfer a land title’, ‘the landowners can’t agree on anything’ etc.

But when the same people have the benefit of hindsight, they usually agree that *this is not the correct ranking* of the real threats to the job they were trying to do: ‘We shouldn’t have been there; we shouldn’t have done it like this; this is how we handle it now—we could have it done years ago.’

Phase	What	Project issues and political outlook
1	Panguna: early 1970s	<p><i>Political:</i> Strong intentions to control national affairs by government in Waigani.</p> <p><i>Key issue:</i> Develop the mine to establish a self-reliant economy at Independence.</p> <p><i>Shortcut:</i> Toleration of multi-national capital flows and environmental damage; lack of local approval; failure to conduct seven year reviews.</p> <p><i>Eventual cost:</i> Inter-ethnic and inter-generational conflict; constitutional crisis.</p>
2	Ok Tedi: late 1970s-late 1980s	<p><i>Political:</i> Newly independent government and assertive political and departmental heads.</p> <p><i>Key issue:</i> Show the ability to deal with multi-national corporations and develop the mine on PNG's terms to pay for Eight National Goals.</p> <p><i>Shortcut:</i> 'Fast track' project construction; under-estimation of environmental effects; limited community consultation.</p> <p><i>Eventual cost:</i> Political and legal entanglement; environmental damage.</p>
3	Porgera, Kutubu, Lihir: late 1980s-late 1990s	<p><i>Political:</i> Newly assertive provinces and ethnic groups after closure of Panguna.</p> <p><i>Key issue:</i> Maximise landowner say in project negotiation; greatly increase financial returns to landowners.</p> <p><i>Shortcut:</i> Forfeiture of State revenue and loss of central planning role by the State.</p> <p><i>Eventual cost:</i> Oil &amp; gold money pumped into political power struggles; inter-District fighting in Southern Highlands.</p>
4	Gobe, Moran, Ramu, Hidden Valley: late 1990s-2000+  (in the context of failing States across the region)	<p><i>Political:</i> Nationally: complete overhaul of provincial and district-level government, struggle between national MPs + political appointees and local planners for control of decision-making. Internationally: collapsing governments in many neighbouring countries.</p> <p><i>Key issue:</i> Nationally: re-establishment of planning &amp; its shift to districts; curb corrupt decision-making. Oil &amp; gas projects: constant in-fighting among ILGs/Lancos. Internationally: how to keep the State intact and under constitutional rule.</p> <p><i>Shortcut:</i> High-level initiatives to restore confidence in economy and governance, but neglect of resources and skills to tackle the problems at district level.</p> <p><i>Eventual cost:</i> Nationally: continued 'agensification' of services in districts (with non-resource districts ignored). Internationally: continued loss of investor confidence, continued deterioration of exchange rate, etc</p>

**Table 18 Four phases of resource projects in PNG, 1970 to the present.**

### *National trends: the 'mineral policy process'*

Take the first category: 'Risks stemming from a mistaken outlook on present situations'. The modern resources industry in PNG has now passed into its fourth distinct phase since 1970, each quickly following the next with quite substantial changes in the orientation in relation to local and national objectives (Table 18).

The differences in political outlook between each phase are very clear to us today. Equally, there is general consensus that the outcomes I have summarised here can be attributed to them in large measure. Surprisingly, the retort that 'wisdom in hindsight is all very well' is rarely used as a defence of what was done at the earlier projects by those who were there—except wistfully.

This suggests that *it is possible* to think more carefully about what we are doing today and to 'act smarter' in order to escape similar consequences. At least we can make a conscious effort to arrive at a better articulated understanding of what is going on in a shorter time than our predecessors. 'Knowledge in time' is the way to beat the hindsight trap.

### *The current situation*

In Table 18, the Phase 4 is the present. What is it really like?

We should be under no illusions now that the trend started in the 1980s for provinces and ethnic groups to become more assertive and politically powerful, is reaching its end-game. The kinds of demands that are now routine—that simply amount to many local struggles for control of political power and resources—were scarcely seen at the time of Independence other than in Bougainville.

However, this is also overlain by cultural differences in the hinterlands of the resource projects whose revenue flows kick-started this process. For example, the non-political nature of the societies around Ok Tedi masked for many years the real issues of concern to the downstream people and their very practical worries over damage to the environment. By comparison, in the highly political societies of the Southern Highlands and Enga Province, well-connected to the national political mainstream, have made sure that there was no such delay in the 1980s in us being able to see what they have wanted.

The other side of the coin is that the State spent much of the 1990s stepping back from planning for national development, or giving firm and consistent legislative directives over anything, and most notably from spending the resource rents which it earns from mining and petroleum on the national objectives it established at the time of Independence.<sup>37</sup>

This now poses a very real threat to the operability of new projects because of (a) constantly increasing costs and unreliability of State-owned utilities like Elcom and Air Niugini, (b) the deteriorating state of infrastructure, ranging from highways and police accommodation to agriculture extension and village aid posts, and (c) the increased social and economic risks posed by local reactions to failing infrastructure in project areas.

At the time of writing, the governance of Papua New Guinea is heading in two directions at once. On the one hand, an administrative response to the withdrawal of the State

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<sup>37</sup> The establishment in 1990 of the Special Support Grants to resource provinces and the rise in importance of the Tax Credit Scheme from 1992 both amount to forfeitures of revenue and sovereignty to local interests by the State.

consists of the *Organic Law on Provincial and Local Level Government* (OLPLLG) and the shift of planning, budgeting and implementation responsibilities to the Districts: ‘the reforms’. Where properly qualified public servants and the infrastructure to support them exist, local level governance could be made to work quite well.

On the other hand, national MPs and their political appointees to governments and statutory authorities are gaining in their dominance of the particular levers of State they want to control—the ones which concern the release of funds and deals over State assets. The result is a long-standing backlog in the remittal of funds from Port Moresby to budget lines in the provincial administrations. At the time of writing, no end appears in sight to this problem.

Which of these two tendencies will prevail cannot be said today and form the last and uncertain part of Table 18. What should be clear from my analysis, though, is that every new project carries the burden of this history whether it likes it or not, because resource projects have been an important catalyst for political change in Papua New Guinea over the last 30 years, and overwhelmingly during the last 15 years.

This means that even a comparatively small project like Hidden Valley has the potential either to exacerbate a worsening trend, or alternatively to help nurture the seeds of reform that have been planted.

This problem of involvement with the political context of national development is one that must be addressed by management in all project negotiations; it is not possible to side-step it. Acting as if it was not present constitutes risk-taking.

### **Social and political risks specific to Wau—in the local political process**

Wau fits into the above in no less a complex way than did the other projects. In my assessment, the same and related headings can be filled in as follows.<sup>38</sup>

#### *‘Big-man’ politics*

Classic ‘big-man’ style politics are not present, and no ethnic group has an agenda other than that they want to be empowered to reap mining benefits at last. Wau is not in the mainstream of national politics, while provincial politics are played out in Lae and only affect Wau insofar as they affect budget allocations for basic services.

However, it should be noted that there is often a tension between different levels of government based on the different objectives of office-bearers at each level, as well as between administrators and political representatives at each level. Nonetheless, it is an easy matter to advise that the company should not seek to limit its linkages to government to the minimal set implied by the permitting considerations of the *Mining Act* (see *Recommendation 1*).

#### *Cultural basis of leadership and the Development Forum*

The Mining Development Forum is an innovation that emerged at Porgera and was probably invented by Harry Derkley, of the Enga Provincial Government, and Jonathan Paraia and Kurubu Ipara, two Porgeran leaders who I mention by name because they

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<sup>38</sup> Caution is required in reading this—facts can change rapidly and when they do, assessments must be altered.

remain in the forefront of Porgerans affairs today.<sup>39</sup> These men, however, are leaders in a very different type of society to those around the Hidden Valley project. As already discussed, p. 6, turmoil may be expected if Biangai and Watut spokesmen are *alone able to represent landowners* during Forum negotiations.

The means to mitigate this risk are at hand. The key is intensive of consultation with villagers and the holding of ‘open’ workshops at which a wider representation of people can be present to ensure that all substantive issues are sorted out *outside* formal Forum meetings. Plenty of time was allowed for the Porgera Forum—it opened on 9 December 1988 and concluded on 12 May 1989—but this is a different issue. During the Ramu Forum, formal meetings in Madang were matched by exhaustive landowner consultative meetings held in the villages (see *Recommendation 35*).

#### *Corruption-of-process land cases*

Wau, as everywhere else, has good reason to fear importuners who will do anything to gain wealth by backdoor means. This has been going on all over Papua New Guinea during what I have called Phase 4, as anyone can see by reading the daily newspapers.

At the moment the key area is land and the favoured target is cash payouts given by orders of the National Lands Commission. I will term this ‘corruption of process’ because the importuners obtain signatures on documents that should never be obtained if proper administrative processes were followed.

In this and the neighbouring district an especially ‘hot’ case in 2000 was that of a man from Mumeng in winning a determination over the Bulolo township land. Another man based in Moresby manoeuvred to make a land title conversion over an area of 50,000 hectares in the Middle Watut that includes the Wafi project, complete with letter of endorsement from the Deputy Prime Minister in Port Moresby.<sup>40</sup>

Corruption is dependent on the backdoor connections of would-be importuners to functionaries who can be corrupted. On this count I suggest that Wau is a good deal less vulnerable than many places for the same reasons as I have just given: both Watut and Biangai have connections in Lae and Moresby, but they are not among the power brokers of money politics.<sup>41</sup>

Wau’s key problem, indeed, is of *not having enough strings to pull in high places* to ensure that what it is entitled to actually reaches the district. This applies to Morobe as a whole: the Provincial Administration sued the national government for non-payment of K22m of its grants in 1999, and won. But the money, lawfully entitled under the Organic Law funding formula, was still not paid (‘Focus’ *Post-Courier* 27 October 2000). This contrasts with a series of huge land compensation payments, similar to the two Morobe cases above, ordered by the National Lands Commission during the same budget period

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<sup>39</sup> For example, they gave presentations at the Mining Investment Conference in Sydney in December 2000.

<sup>40</sup> Significantly, in both cases the intrigues were perpetrated *outside* the province and officials based in the province were able to take swift action to head off any damage.

<sup>41</sup> In fact, generally the opposite. The journalist who broke the NPF scandal in News Ltd papers, Ruth Waram (and won an award for investigative journalism for it) is a Moresby-based Biangai. On the other hand, a dissident Watut group was cleverly able to run a press release in *The National* on the day of an MCG landowner workshop in 1998.

and totalling more than Morobe is owed, and which were somehow paid, often despite advice from provincial officials to the contrary.<sup>42</sup>

As already discussed, the long history of land alienation and litigation over land at Wau and Bulolo includes many cases that have yet to be completely resolved. One of these is the the '2210 hectares' land portion, which includes a possible site for tailings storage (p. 19).

Insofar as recommendations can be made in this area, the essence of an 'avoidance strategy' is to be as well-informed as possible about the work of the relevant decision-making bodies at various levels of government (see *Recommendation 1*) while at the same time endeavouring to be as well-prepared in relation to historical and legal facts as possible (see *Recommendation 6*).

#### *Land ownership in the SML area*

What is the risk of local challenges to the status quo at Hidden Valley? No-one can ever say any customary ownership is 100% secure, but the company's Liaison staff have worked very carefully over a period of many years to act as inclusively as possible and to identify all parties who have something to say about Hidden Valley.

The level of risk in this area is considered to be low—as long as a precautionary attitude is maintained.

#### *Inter-ethnic and 'tribal' fighting*

The leading resource province of Southern Highlands has been racked by tribal fighting during 1999 and 2000. No-one can overlook this. Could something similar disrupt operations at Wau?

This is unlikely; sporadic acts of 'community retaliation' have occurred from time to time in the past decade, most notably when the Chimbu settlers were evicted from Wau in 1994 (Kim Denwer 'Wau situation report' 23 August 1994; see Volume 2). But the risk assessment for *prolonged* inter-ethnic violence is very low.

#### *Unrest related to Election 2002*

The Electoral Commission has announced that the 2002 National Elections will be held from 15-29 June 2002. Changes in the composition of government will definitely occur from July 2002 when the writs are returned and between 40 and 60 percent of national members will lose their seats. However, assuming the project has not become over-reliant on special decision-making by the national government, the risk of disruption to the project will not be markedly different than during 'normal' times between elections (since Aurora took the project in 1998 there have been three mining ministers).

On the other hand, it should be realised that candidates for election in the Bulolo Open electorate will be already prominent community leaders. Their number can be expected to include project landowners, local government officials, public servants, local business identities—who may or may not hold contracts with MCG—and MCG employees. Local political activity will mean that it will not be possible to hold landowner workshops and

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<sup>42</sup> Some payments in the media recently were various portions in Mt Hagen, K4.4m (WHPA files, Dec 1999), Vanimo, K2.7m and Era Nese K4.4m (*The National* 1 May 2000), Goroka township, K22.9m and an unnamed portion K5.9m (*Post-Courier* 25 September 2000). Corruption has not yet been found in any of these NLC cases but they have now been sent to the National Court for review.

Development Forum meetings, or to expect the kinds of infrastructure commitments that it may be necessary to incorporate into the project agreements, during the campaign period of February-June 2002 and a formation of government period thereafter lasting until August 2002 (see *Recommendation 4*).

#### *The provincial and local level government reforms*

From about 1998 to the present the Morobe Provincial Administration has been preoccupied with the reforms. I portrayed the reform process as a tug-of-war between national and provincial forces and one in which it is not clear who will gain the upper hand. If, in respect of Morobe, national politics proves more dominant, then the national Minister for Mining would be expected to play a greater role in project negotiations; if provincial, then the District Manager and the Morobe Provincial Mining Advisory Board would be allowed to handle most matters.

The Project Liaison Office of the national Department of Mining is at the present time playing the role of umpire; while answering to the national minister, Project Liaison staff happen at present to act in a significantly 'provincial' way. Their much greater experience than any other party also helps enhance their standing.

The desired outcome is that the Hidden Valley project will be driven politically by the bureaucracy and following its written agreements, not by issue politics. On balance, this is what is likely to happen.

#### *Fly-in-fly-out rostering*

The question of whether the expatriate and 'other PNG' hire components of the workforce should be accommodated at the project site or can be on fly-in-fly-out rostering has been the subject of heated political debate in recent years. The position of the Porgera landowners is that they want a total ban enforced on fly-in-fly-out workers in order to force employees to spend their incomes locally, and legislation introduced by the MP for Lagaip-Porgera now compels operators to pay a imposte on fly-in-fly-out airfares. The position of the Lihir landowners, on the other hand, is that they *did not want* a large 'foreign' community on their island; the result has been the provision of company housing for approximately 70 expatriate but perhaps no more than six Papua New Guinean, employee families. The bulk of 'other PNG' employees are compelled to use fly-in-fly-out rostering arrangements.

At Wau, neither landowners nor other local political voices have taken a stand on either of these contradictory positions. However, there is actually a risk to the operability of the project if an insufficient number of expatriate employees do not relocate to Wau. Their presence, along with that of senior Papua New Guinean employees, is the only means of guaranteeing the revitalisation of (i) international schooling at Wau and Bulolo, (ii) improving recreational facilities and (iii) seeing an upgrade in the basic kinds of goods and services available at Wau (stores, coffee shops, hairdressers, banks etc). If this does not happen, it will be hard to recruit qualified staff regardless of whether they live at Wau or fly in and fly out.<sup>43</sup>

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<sup>43</sup> In 2000, mine was one of two expatriate families at Wau. However, because of schooling requirements I commuted between Lae and Wau by road. I found this an unacceptable burden on family life and I would not do it again.



The optimal situation is therefore one where a mix of options is available but a sufficient number of employee families relocate to Wau to help revitalise town amenities (see *Recommendation 26*).

### **Social and political risks specific to Wau—relating to the project design**

In contradistinction to the foregoing, which concerns the political environment in which the project is located, a complementary area of project risk relates to design elements of the project itself.

#### *General considerations*

The hypothetical ‘perfect project’ from a local point of view is one that

- has a minimal requirement for land and a negligible physical footprint;
- has no environmental emissions;
- fits the employability of local people and employs as many of them as possible, starting with the project area landowners;
- creates as much spin-off business as possible of a type that fits with local capabilities;
- brings new civic infrastructure and services to the District;
- creates a steady and generous flow of resource rents to eligible recipients;
- has an indefinite life.

All actual projects represent a compromise between these ideals and what is economically acceptable to the investor. Judging what exact balance is right has proved extremely difficult in the past.

#### *Requirement for land and physical footprint*

The Wau Valley is already an industrial landscape and it has a modest population density compared with similar sized valleys in the highlands, or the narrow coastal strips of arable land available to villagers in the New Guinea islands. This should be tempered by the observation that large portions of the land available to villagers at Wau are under *Themeda/Imperata* grasslands and have a limited agricultural usefulness. This is especially problematic for (a) settlers on the state-issued agricultural leases of places like Nemnem Ridge and Kobiak, (b) the recently established Kwembu settlement of Green Hill and (c) people settled by customary owners, such as the Kunimaipa and Ono River people along Big Wau Creek.

A related problem occurs where the land used by settlers backs onto virgin forests; at first glance it may seem that these people have ample bush reserves they can exploit if anything threatens their ability use the land they have already cleared. Unfortunately, this is very likely to be unacceptable to the customary owners because a granting of the right to make a settlement and use specific land blocks around does not confer an infinite extensibility of use rights into the bush, where a different pattern of ownership may pertain. The main people in this situation are the Watut settlers at Heyu and Hikinangowe, given use rights by particular families at Nauti village, and various mostly

Watut groups given use rights to land in the vicinity of Kwembu village, on the ridges above Green Hill.

While land uptake for the project near or in the town poses no major problems in relation to existing communities, any reduction in the useability of land in these other places may trigger demands for restitution.

#### *Relocation of settlements—issues*

The conventional response of project operators in Papua New Guinea in relation to villages and land that is made uninhabitable by mining is to offer relocation packages. Relocation was a major project design issue at Porgera and at Lihir.

In general, customary owners actively seek to be relocated. They see this as a chance to obtain high quality housing and they enjoy this unmistakable public recognition of their status as primary landowners. In return, they give the company a heightened level of support for ‘looking after’ them in this way. Women and the elderly are especial beneficiaries, because they invariably have limited control over the disposal of other types of benefits that are realised in cash. Relocation is thus a covert form of resource rent that the operator and landowners can jointly gain great benefit from.

However, should any project find itself in the position of having to relocate settlers who are *not* primary landowners, the situation would be quite different. This would spark an immediate demand to built high covenant housing for landowners in *unaffected* villages. In Hidden Valley’s case, D. King’s July 2000 survey found a total of 95 households at Kwembu and Winima, and 177 households at Nauti, Minava, Akikanda, Yokua and Kaumanga. The obvious implication is that the cost of a relocation programme would spread far wider than the actual settlements that might be displaced by mining activities and cleared easements (see *Recommendation 22*).

#### *Mine life—the primary social impact*

For the purposes of the feasibility study, a mine life of 10 years is being quoted. However, the ability of local stakeholders, whether project area landowners, small business owners, or local authorities, to reap the benefits of mining over a short period is extremely limited.

At *all* past projects in Papua New Guinea, the collapse of local planning and the use of new revenue streams for immediate consumption have been the norm for the early part of the production period. In general, the poorer the social development indicators in the project area, the worse the performance at harnessing mining income on the part of both lower level beneficiaries, like landowners, and higher level ones, like governments.

In the worst cases, all in the media in the second half of 2000, the three provinces with the greatest wealth from mining and oil revenues—Western, Enga and Southern Highlands—are either suspended or close to suspension as a result of mismanagement and misappropriation of funds in government.

This highlights the extreme vulnerability in Papua New Guinea of the windfall revenues from resource projects to wastage and the consequent double jeopardy of a short mine life. Given this as the normative case, there are two ways that matters can be improved in respect of the Hidden Valley project:

- (i) if production can be eked out beyond the ‘feasibility’ mine life to give stakeholders more time to learn how to deal with the new income streams;

- (ii) if the Development Forum agreements are constructed better; if stakeholders participate more effectively and democratically in making decisions early on in the project life; if business entities, trusts and benefit distribution mechanisms are more robustly designed and better defended against mismanagement.

The mine life is possibly the only parameter whose effect cannot be mitigated by better designed company liaison activities or a more careful negotiating strategy. Observers also concur that it is more significant than the absolute size of benefits on an annual basis (see *Recommendation 25*).

## **Social and political risks specific to Wau—relating to the environment**

### *Environmental emissions—general considerations*

Melanesian culture supplies a rather different view of cause-and-effect than does Western culture. A useful concept is that of ‘agency’. As a broad and risky generalisation, things happen the way they do because of the motives and agendas of human beings. If people have kindly intentions and consider<sup>44</sup> others, enterprises can be carried out harmoniously and successfully. If they act in a way that is perceived to be mean and self-centred, conflict ensues and destroys any chance of success. Most specifically, people’s behaviour can be the ‘agent’ of physical disasters as well. This can be rather metaphysical, as when a man’s suppressed anger causes him to become sick or even crashes his car, or it can be rather technical, as when people hire a sorcerer<sup>45</sup> to make someone sick or bankrupt their business (these are both recent accusations at Wau).

In the specific context of mining, aggrieved villagers readily identify particular environmental emissions as the ‘agents’ of their discontent and feeling of lack of well-being. There are two recent examples relevant to Hidden Valley’s situation.

In the areas downstream of Ok Tedi, a complex of beliefs in *kapa marasin* (‘toxic mine waste’) arose in the period 1991-92; I was one of the principal investigators at the time (Burton 1993). I was shown gardens believed to be affected by *kapa marasin* that were 20km from the Ok Tedi River into which tailings were been disposed. Villagers pointed to brown leaves on banana plants and pumpkins that had failed to grow as expected and had ingenious explanations for how environmental effects could be felt so far from the physically affected river channel. My colleague Kirsch (Kirsch 1993) compared village explanations of misadventure with Yonggom sorcery beliefs; in one instance a canoe that had overturned in the river five years previously, drowning three people, was re-evaluated and explained afresh in terms of the mining company’s behaviour and the canoe owner was now looking towards the company for compensation.

In the mid-1990s a group known as the Kulini Strickland Landowners Association came to exert considerable political pressure on Placer’s Porgera operation on the basis of a virtually identical beliefs about pollution across a wide area of country inhabited by the Duna people of Lake Kapiago and in the Strickland River (which indeed receives a significant inflow of red iron oxide-laden mine discharges). The investigating consultants were told that people who swam or rafted across the Strickland (at >130 km distance

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<sup>44</sup> ‘Consider’ here means more than mentally contemplate. It is in the other English sense of giving someone ‘a consideration’, i.e. sharing some good fortune with them.

<sup>45</sup> Sorcery (*puripuri*, *poison*, *pawa*) tends to be linked to technical procedures like spells and potions, as opposed to witchcraft (*sanguma*) which tends to be thought of as a genetic predisposition in the witch, though under the control of his or her will.

from the mine) had ‘skin blistering ... swollen stomachs, swollen skin, swollen faces ... yellowish and bloody diarrhoea and really bloodshot eyes’ and that game animals were dying along the banks (Haley and Robinson 1996:14).

The term *marasin* was also used here, but it was discovered that the English term ‘pollution’, which was now commonly used, had undergone a shift in meaning; it was understood as an invariably lethal contaminant (Haley and Robinson 1996:31). A key problem was that Placer had waited too long to make patrols to the area. When it did act and began to send environmental staff, their concerned manner was misinterpreted by Duna people as proof of the company’s complicity in a cover-up they had suspected all along. When it began a programme of water supply improvement, this confirmed in their eyes that traditional sources were now deadly. (The consultants recommended improving water supplies over a wider area to avoid this deduction.)

This discussion may seem to be far removed from the physical design considerations of waste and tailings dumps at Wau. But as the operators of the Ok Tedi and Porgera mines have found out to their cost, the mode of thinking I have sketched here unleashed powerful political forces upon them.

Let me be very clear. The complainants in these cases were strident about effects that laboratory testing would have difficulty detecting and therefore that could in advance be selected for inclusion in an environmental monitoring programme. This is because they are really about people’s feelings of well-being and, in the case of both the Kopiago and Lower Ok Tedi people, their sense of neglect by the government.

At Ok Tedi, widespread physical damage that could be easily measured did follow, and the recognition of this now forms the basis of the company’s restitutive efforts. The political momentum for action against the company, however, stems from the earlier period when physical damage was localised and its origin ambiguous. In Porgera’s case, the extension of its permits to operate have been dependent on finding some political solution to the Kulini Strickland people’s complaints.

The conclusion that can be drawn from this is that mining projects can become imperilled if complaints about pollutants couched in hard-to-grasp Melanesian terms are dismissed as frivolous or illogical. They may be—but they are the complaints that connect most directly to local political action. Constant consultation with those who perceive they stand to be affected is essential (see *Recommendation 30*).

I will now try to apply some of these considerations to project facilities as they are currently configured.

#### *Water sources and construction run-off*

Following on from above, perceptions of water quality are even more important than measured water quality. This is borne out by the fact that villagers will tolerate what on the face of it appear to be high risk sources—such as seepage into 44 gallon drums in the banks of the Bulolo River north of Bulolo town—if (a) there are no *acute* effects on them and (b) the actions of others have not forced them to abandon better sources for poorer ones.

Despite high rainfall, good water is at a premium across the whole area. Typical sources are side creeks running out of forested land, which are quite clean when the ground above them is not disturbed. But many dry up during prolonged dry spells, forcing users to draw water from less favoured sources—usually the main channels of the rivers like the Watut,

Bulolo, Big Wau, and Kwembu creek. The quality of creek sources is based on the assumption that there is no land disturbance in the creek head, but at places like Hikinangowe below the Bulldog Road ground disturbance as a result of construction traffic is quite likely (Figure 14).

It goes without saying that continuing dirty water run-off during normal operations will *not* be acceptable to landowners. Water supply improvement must be taken on as a company responsibility (see *Recommendation 20*).

Water quality issues are, of course, covered in detail in the environmental report.



**Figure 14** Typical settlement water source (at Hikinangowe village); Side creeks like this one dry up during prolonged spells with no rain.

#### *The containment of wastes—general considerations*

The foregoing deals with what can be expected to be unavoidable but modest environmental impacts. Subsequent sections, however, must deal with the possibility of serious environmental failures. These are *possibilities* and I stress that at this stage landowners have not been presented with an up-to-date plan of the project facilities. Indeed, during the environmental inception patrol in mid-2000, it was clear that Nauti villagers knew only of CRA's 1988 intention to put a tailings dump on the flat land behind the Hamata prospect. The inception patrol put the scenario of waste rock dumps—in some general location—to them for the first time.

### *Local acceptability of waste dumps in Big Wau Creek and Upper Watut headwaters*

The reactions of landowners to the location of waste dumps in the headwaters of their main rivers are negative. Villagers are intolerant of the idea that there will be any activity in the headwaters that could conceivably result in the leakage of *any* water that has come into contact with any machinery or process equipment that may be used in the vicinity of Hidden Valley.

In the case of the Upper Watut, during the environmental inception patrol villagers alleged that fish were *already affected* by the company and the main channel of the Watut was running with a milky discolourant. The comments indistinguishable as modes of explanation to the *kapa marasin* beliefs discussed earlier.

There is little utility in attempting to argue against these perceptions.

It is assumed, in making any recommendations about waste dumps, that they can be designed so as to divert rainwater and trap run-off sedimentation and that this is a proven technique. However, landowners should be able to satisfy themselves on this point (see *Recommendation 31*).

Landowners must be allowed to see and judge for themselves what kinds of lifestyle changes they can expect to experience when they sign project agreements. While not able to digest scientific reports at first hand, all landowners are now aware of the meaning of the word 'environment'. All are familiar with the problems experienced at other mine sites.

### *Acceptability of tailings storage behind the main waste dumps*

Tailings storage behind the waste dumps will have little if any effect on the sizes of the dump LMPs and are therefore of neutral or even positive effect, considering only their *physical requirements*, compared with a dedicated tailings storage area in the Wau Valley.

The acceptability to landowners is another matter.

As already intimated, landowners and settlers will require a good deal of convincing that dumps in the mountains are a safe and practical means of containing unprocessed waste rock indefinitely into the future. The task of convincing them that process waste can be stored there as well will be even more onerous.

As a prelude to what may be expected when this plan is presented, Kepas Hangitau, the headman of Nauti village, merely inclined his palm to represent the steep slopes of the dump area below the proposed pit during the environmental inception patrol, and shook his head. Landowners require much more information in order to make reasoned decisions (see *Recommendation 32*; see

*Recommendation 33*).

### *Procedure for the arbitration of disputes arising from spillages or containment failures*

It is further assumed that landscaping, spillways and spill traps below the process plant have the capability of containing accidental outflows up to a certain volume. However,

no-one can plan 100% protection against freak events, such as a tank rupturing or a major earthquake or landslide.<sup>46</sup>

In acknowledgment of this, the capability for independent damage assessment is needed together with some acceptable mechanism for dispute arbitration. Openness is essential and best model is that adopted by Placer Niugini in its policy of ‘sustainability reporting’ (see *Recommendation 36*).

The best prototype for this kind of external review is that of CSIRO (1996).

#### *Procedure for restitution in case of spillages or containment failures*

The compensation procedures set out in the *Mining Act* are sufficient to handle minor spillages or exceptional periods of run-off such as may occasionally overwhelm spillways and sediment traps. But this may not be possible with larger scale failures. The means of making restitution in case of a major containment failure must be considered (see *Recommendation 34*).

#### *Province-level acceptability of a waste dump in the Upper Watut headwaters*

The Hidden Valley project is configured in an unfavourable way in relation to the distribution of population in the Watut-Markham system. This bears sobering comparison with the Porgera-Lagaip-Strickland-Fly system. Both start at the same altitude of over 2200m, but the greatest density of population at Porgera is adjacent to the mine facilities. Wastes entering the river system are carried *away* from areas of human settlement into the empty gorges of the Lagaip; lower down, the Strickland and Fly have a huge dilution effect. At Hidden Valley, any emission of sediment or accidental spillages that enter the river system will be carried *into* areas of heavy population, first in the Bulolo Valley, then later in the Markham and the vicinity of Lae city.

Once again, *perceptions* of the emissions of pollutants are of critical importance. Notwithstanding the 75 year history of environmentally damaging discharges of wastes at Edie Creek, the managers of fishery projects in the Huon Gulf or along the coast towards Salamaua may be expected to be among the first to complain if accidental spillages occur (see

*Recommendation 33*).

#### *Comparative acceptability of tailings storage in the Wau Valley*

Alternative plans for tailings disposal involve a pipeline to the Wau Valley and construction of a dam on pastoral land acquired for this purpose.

At first sight this may be thought to be a wasteful use of agricultural land, and there are the further considerations of visual amenity, dust, noise and proximity to Wau town. However, there are a series of positives that must be set against them (see *Recommendation 24*):

- compared to the vicinity of Hidden Valley, the Wau Valley location is (a) twice as sunny, (b) has half the rainfall and (c) is almost flat: these factors would reduce tailings storage risks, and perceptions about them, very considerably;

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<sup>46</sup> In August 1989, a spur collapsed next to the Ok Tedi plant site—Vancouver Ridge—spilling between 120m and 180m tonnes of material into the river system. The present project could not survive an event of similar magnitude in a comparable location.

- landscaping and the afforestation of embankments can begin immediately the facility is brought into use, giving a practical demonstration of how land reclamation for mine closure will be carried out;
- a well-managed storage facility would show local stakeholders, visiting governmental regulators, and shareholders, that the company has adopted a precautionary approach to its environmental duty of care.

#### *Access road selection*

CRA and AGF examined six major access road routes to Hidden Valley. Cost is the overwhelming consideration but differences in social and political risks have the potential to outweigh lesser cost differences.

Until recently, AR4 was the preferred route; it followed a ridge line between land owned by Winima families, to the south, and Kwembu families, to the north. This meant that compensation for bush clearance, and any environmental damage, would have been shared between the two. (A route exclusively on Kwembu land or exclusively on Winima land would have been undesirable.) On social grounds, AR4 has been considered the least risk-laden or harmful route; the two main considerations for this assessment are (i) the Kwembu and Winima landowners would have the best chance of controlling incursions by settlers on the route because they unambiguously own it and (ii) the route does not bring into consideration new people not already among the project's principal landowners.

The access route to Hidden Valley now proposed is the Bulldog fair weather track from Edie Creek on the grounds of lower capital cost; an accommodation camp is also proposed for a site between Edie Creek and Hidden Valley.<sup>47</sup> From a social point of view, this study is bound to point out that the new route and the camp location may be expected draw disputes from two quarters.

The first will be from the alluvial gold miners at Edie Creek. The upgraded road can be routed round existing gold mining areas, but earth-moving on any scale may well uncover new ground that alluvial miners will find 'gold lines' in, and try to work with both hand tools or the larger equipment such as backhoes and D6s which some possess. This may cause disruption and/or raise safety issues. As well as this, the Edie Creek route will not be popular with landowners because of (a) the difficulty of controlling the encroachment of settlers on their land from this direction, and (b) fears concerning interaction between mine-workers and settler communities (regarding lawlessness, gambling, STDs etc).

The second concerns the fact that the Edie Creek road passes directly through the land known as the '6000 hectares' which is owned by the Biangai as a whole (see p. 19). In February 2001, the company's Liaison Department received an ambit claim from a group of Biangai for usage of the Edie Creek road for the last 12 years, at the nominal rate of K84,000 per year. The signatories include some of the existing Kwembu and Winima landowners, but they are joined by residents of others of the seven Biangai villages. The implications, if Edie Creek is finalised as the access route, are unpredictable.

It should be added for the record that access along the Watut River from Bulolo, a discarded CRA option, or through the Bulolo state forest to Edie Creek, an AGF option,

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<sup>47</sup> At the time of writing, design plans had not been seen by the author.



would open up access to bush that is currently remote from feeder roads; both would encourage settlers to colonise areas of essentially virgin forest that at present act as an environmental reserve between Hidden Valley and the nearest centres of human population. The area between Heyu and Hikinangowe settlements is particularly vulnerable in this respect.

In summary, the choice of access route and any other facilities sited between Edie Creek and Hidden Valley is a decision with major ramifications for the overall social and environmental impact of the project. If new people are brought into the impact zone by the configuration of the infrastructure, the Liaison Department will require significant additional resources to manage the company's dealing with them (see *Recommendation 23*).

## CHAPTER 6

### CONCLUSIONS AND RECOMMENDATIONS

As mentioned at the outset (p. 11), this study does not aim to present itself, or its recommendations, in the form of a ‘Social issues management plan’. This should be properly constructed after the Development Forum, and when all the issues brought out there have been thought through by each group of project stakeholders. Similarly I have not sought to examine the organisation of MCG’s Liaison Department, nor to describe current Liaison programmes. Both are highly relevant to the mitigation of the social impacts of the project, but a concentration on issues has forced such a review aside.

There are thematic deficiencies. For example, I do devote a special section to women’s issues, when it is well known that mining has very accentuated gender-specific effects. I have raised some of these (pp. 8, 45, 49), but I have generally left them aside to place the main focus on the more specific Wau and Bulolo problems of historical dispossession, the bearing of social organisation on negotiations, how benefits may be distributed well or badly, and so on. My thinking is that if these things go wrong, they will go wrong for everybody, including women.<sup>48</sup>

I have attempted to include here the main themes that the Forum may address, but it is unlikely that I will have correctly anticipated the balance of priorities that Forum participants will give to them. In some areas I may have missed the mark entirely, while in others it will not have been possible for me to raise points at all—although my colleagues and I might reasonably anticipate them—because they will be expressed in purely political terms.

What follows first is the list of recommendations arising from discussions in the text and cross-referenced to those discussions.

#### CONSOLIDATED LIST OF RECOMMENDATIONS

##### **General and areas of political risk**

*Recommendation 1.* The company should be active in its engagement with Papua New Guinea’s political process in the ways that are appropriate to it; its key linkages are to the national Department of Mining through its co-ordinator in the Project Liaison section, to the provincial administration through the Morobe Provincial Mining Advisory Board, to the District through the Bulolo District Mining Contact Group, and to Local Level Government by day-to-day contact with councillors and council managers. Different sectors of management should be aware of current agendas at each of these levels (p. 68, 69).

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<sup>48</sup> My colleagues, S. Bonnell (Subada Pty), and B. Yaya and J. Krimbu (of MCG’s Liaison Department) have in fact been very active on women’s issues since 1999.

*Recommendation 2.* It is important to avoid negotiating with Biangai and Watut leaders in such a way that they become enjoined or constrained to make decisions about the project in isolation from their support bases. The issues that give rise to anxiety in their communities are unpredictable and not necessarily those that we consider as ‘major’ decisions for the project; they have to be worked through by all community members and time must be allowed for this (pp. 8, 68).

*Recommendation 3.* Violent responses to interpersonal conflict are not as common at Wau as perhaps elsewhere in Papua New Guinea, but this should never be taken for granted. A precautionary approach is advised; dealings with leaders should be conducted in a way that aims to minimise their exposure to censure and therefore physical insecurity (p. 10).

*Recommendation 4.* Negotiations with stakeholders are not recommended during the campaign period before and for two months after the national elections to be held 15-29 June 2002 (p. 71).

## **Legal matters**

*Recommendation 5.* Because of the relative security of the Provincial Land Court decision, ‘Hidden Valley’ is name that acts to unify landowner groups. In future, project documentation and local discussions alike should emphasise ‘Hidden Valley, Papua New Guinea’ as the location of the present project (p. 4).

*Recommendation 6.* Usage of land in EL497 by the project may be expected to re-open demands to have Biangai evidence concerning this part of the Upper Watut, given in the Local Land Court but discarded with the entirety of this case by G.C Laphorne, heard again. The existing court transcripts should be reviewed by a competent legal authority and discussions held with provincial lands and legal officers (pp. 19, 26, 70). This can be pursued jointly with negotiation (see *Recommendation 27*).

*Recommendation 7.* Should the project require the use of land within the 2210 hectares in the Wau Valley, the status and security of the State’s title over this land should be the subject of further social mapping, and review by a competent legal authority. This should include interviews with elders in villages other than Kwembu and Winima, archival research and the collation of extant records and legal documents in the provincial Division of Lands, Land Titles Commission, National Archives and other repositories (p. 19).

## **Community and workforce issues**

### *Education, training and employment*

*Recommendation 8.* The company should affirm its general commitment to providing education assistance to landowners communities and they may be formally incorporated into the project agreements. However, existing arrangements must be modified to achieve an outcome that redresses the present ‘remote rural’ disadvantage (p. 49).

*Recommendation 9.* If this feasibility study is approved, a Community School for Nauti should be taken on as a special project without fail. The Community Hall is quite satisfactory, with the improvement of a teacher’s office, desks and other classroom fittings, for use as a classroom for the time being; and teachers’ housing is required (p. 50).

*Recommendation 10.* If a yearly parental contribution is retained for education subsidies to high school, college and university courses, it should be capped at a level affordable to parents (K200 is suggested) as soon as possible (p. 50).

*Recommendation 11.* Gender-balanced outcomes should be pursued in respect of both education assistance, workforce training and employment. When workforce requirements are finalised, a plan should be commissioned which spells out employment issues for women and makes specific recommendations to reduce to disparity of males to females in company employment (p. 51).

*Recommendation 12.* Undertakings in the project agreements relating to landowner employment may be impossible to implement fully. When workforce requirements are finalised, a plan should be commissioned which identifies areas of low skill work amenable to letting out to village contractors, youth and women's groups, and forms of non-mine related informal business that can be undertaken by those left out of employable categories (p. 51).

### *Community health*

*Recommendation 13.* Commitments to village health should continue but they should be formally incorporated into the project agreements. Management has the option to place conditions on its financial contribution and to negotiate to offset cost against other available income streams (p. 59).

*Recommendation 14.* The objectives and management of the village health programme should be the subject of continuous review, and this should be overseen on a continuing basis by the company's senior medical officer, or by a contractor competent to do so. The design of the health programme should place high emphasis on continuity of outreach (p. 60).

*Recommendation 15.* A health monitoring and reporting system should be put in place to measure the effectiveness of particular aspects of health delivery: e.g. MCH, spleen reduction, malaria morbidity. Causes of death should be properly investigated in out-patients as well as in-patients (p. 60).

### *Village improvement*

*Recommendation 16.* Any efforts at infrastructure improvement in villages requires the attention of a full-time technical officer with substantial hands-on experience, relevant trade skills and good contacts within Papua New Guinea in the area of rural development. The ability to deal with physical planners and engineers with the Morobe Provincial Administration and Bulolo District is an additional requirement. It is greatly preferable that the company should create a position for such a person in its Liaison Department rather than let a private contract for this work locally; however, the contracting of a development agency could be considered (p. 51).

*Recommendation 17.* The improvement of housing in landowner villages is a highly desirable goal; the means of achieving it should be the subject of discussion at appropriate talks (p. 60).

*Recommendation 18.* The project agreements should set out a timetable for (i) connections to villages using Elcom power, and (ii) the installation elsewhere of alternative supplies. Forum discussions should negotiate a cost-sharing arrangement for connections within villages to individual houses and the project agreements should set out what these are (p. 61).

*Recommendation 19.* Options for village electrification should be the subject of a feasibility study. Mini-hydro and solar power should be evaluated for the Watut villages (p. 62).

*Recommendation 20.* The company should fund a programme of water supply improvement (i) in the five landowner villages, (ii) at settlements downstream of Hidden Valley in the Upper Watut, (iii) at settlements downstream of Hidden Valley along Big Wau Creek. Where landowners live elsewhere, house tanks should be distributed pro rata to equalise this benefit. The details should be set out in the project agreements (pp. 62, 76).

*Recommendation 21.* Options for improving village sanitation should be included in the health review (p. 62).

## **Project design matters**

### *Configuration of the project*

*Recommendation 22.* The design of project facilities should be such as to avoid the need for relocation. If, however, late changes in the configuration of project infrastructure make the relocation of some households unavoidable, on no account should settlers be relocated if customary owners are not relocated. Equally, on no account should Watut customary owners be relocated if Biangai customary owners are not relocated, and vice versa (p. 73).

*Recommendation 23.* Given the importance of the choice of road access route and placement of accommodation camps and housing, a supplementary document assessing likely social impacts and implications is required when final infrastructure plans are available (p. 80; see also *Recommendation 26*).

*Recommendation 24.* A Tailings Storage Facility located in the Wau Valley should not be discarded as a comparative option. From the point of view of social and political risk factors, it has attractions that may offset its projected extra cost (p. 78).

*Recommendation 25.* Given the choice of a longer mine life at a lower rate of production and a shorter mine life at a higher rate of production, the former is preferable from the point of view of social, economic and environmental impacts (p. 73).

*Recommendation 26.* Fly-in-fly-out issues are negotiable. However, the company should ensure that a sufficient number of senior employee families reside at Wau to help guarantee improvements in basic services for all. A supplementary document assessing likely social impacts and implications is required when final infrastructure plans are available: see also *Recommendation 23* (p. 7171).

### *Configuration of the lease areas*

*Recommendation 27.* As soon as the dump locations and proposed lease boundaries north of the present area of shared ownership in the Upper Watut are finalised, negotiations among all landowners parties should try to reach agreement over percentage ownership. A northward extension of the area of shared ownership is the preferred option (pp. 54-55). This can be pursued jointly with a review of the legal status quo (see *Recommendation 6*).

*Recommendation 28.* The company should make an SML application only for those areas it requires that can be negotiated to lie in shared ownership between Nauti, Kwembu and Winima. All other land should be the subject of LMP applications (p. 55).

*Recommendation 29.* The present loose arrangements among Kwembu and Winima families for the sharing of benefits in the Big Wau and Kauzarewe areas need to be reviewed and placed on a more formal footing. The company should consider its position after seeing Mr Winston Belapuna's Land Investigation Report (p. 57).

### *Environmental consultations*

*Recommendation 30.* A programme of consultation with downstream communities is an essential tool in both avoiding unwanted political accusations and of understanding what kinds of things people want to see in an environmental monitoring programme. Pre-permitting consultations have gone well, but a consultative effort must be maintained over the length of the mine life (pp. 74-75).

*Recommendation 31.* As a matter of utmost priority, provision must exist in the Liaison budget, and time must be set aside, for visits by village representatives to existing mine sites with waste dumps exactly as are proposed for Hidden Valley (p. 77).

*Recommendation 32.* Presentations to village stakeholders should be comprehensive and detailed. Villagers need to see scale models of the facilities in order to understand the principles of what is going to be attempted at Hidden Valley (p. 77).

*Recommendation 33.* It is important to keep provincial stakeholders and downstream communities properly informed of activities at Wau from the time negotiations commence, through construction, and during the life of the mine. This should be done more publicly than is achieved through meetings of the Provincial Mining Advisory Board, and complementing presentations to this board (p. 77, 78).

### *Emergencies*

*Recommendation 34.* The company must consider its ability to make restitution in case of a major containment failure. New environmental legislation to protect villagers against a company's inability to carry-out a clean-up programme is at a draft stage; it is recommended here that a creative solution to the spirit of this legislation is found, even if it does not pass parliament before a Mine Development Agreement is signed (p. 78).

## **Conduct of the Mining Forum**

### *Objectives and optimal outcomes of the Forum*

*Recommendation 35.* As a statement of principle, Forum meetings that discuss for the first time matters that have previously not been considered in open stakeholder workshops or consultative meetings, or that re-open or revise matters on which understandings have been reached during open stakeholder workshops, carry a sharply heightened level of risk. The company should therefore take the line that open workshops or consultative meetings are the correct place to make decisions on 'Wau matters' and that formal Mining Development Forum meetings endorse, but not substantively discuss, decisions arrived at during them (p. 69).

*Recommendation 36.* At the Forum, the company should set out proposals for 'sustainability reporting' and the appointment, by mutual consent, of an environmental assessment agency to review the company's own, and own consultant's, environmental findings in cases of dispute, and to carry out separate investigations independently as necessary (p. 78).

*Recommendation 37.* In consideration of the social disruption that is likely to be generated by one-off cash compensation for bush clearance outside the area of shared ownership, attempts should be made to negotiate a range of options that either widen the area of shared ownership, or replace one-off cash payments for cleared land with project-related 'nest egg compensation'. The preferred mechanism for handling this may be through a trust or foundation; it is recommended that the company investigate the most appropriate financial model to bring to discussions (p. 57; see also *Recommendation 40*).

*Recommendation 38.* Forum participants should adopt the goal of achieving overall balance among the separate benefit streams, taking into account their different methods of quantification and delivery, in the whole package of compensation. Company negotiators should take the lead in this: creative solutions are required to make use of all the benefit streams together during a comparative short project life (p. 64).

*Benefit distribution issues*

*Recommendation 39.* As soon as the Feasibility Study is made public, the expected range of actual Kina amounts of royalty that will be accrue should be presented in the form of optional models of disbursement among cash, special fund (e.g. 'future generations') and/or local authority allocations. This should first be done at pre-Forum Workshops, then a thorough awareness patrol should explain the options at village level (p. 53).

*Recommendation 40.* A very satisfactory use for 'nest egg compensation' (see

*Recommendation 37*) would be to provide seed capital for a housing scheme, to be used up within two years of becoming available. This recommendation is directed at landowners; its objective is to side-step residual disputes over ownership and to minimise the delays these may cause during construction (pp. 60, 60).

*Recommendation 41.* A working group on royalty and compensation distribution should be set up among company and government staff, and village spokesmen. It is suggested that this be a subcommittee reporting to the Bulolo District Mining Contact Group. The contact group should give the subcommittee clear terms of reference (p. 62).

*Recommendation 42.* A Community Express database officer should be identified by the company and trained so as to be able to maintain demographic and genealogical information to an accuracy suitable for use in the distribution of cash benefits. Relevant national qualifications in land management, the use of GIS and experience with Microsoft Office are qualifications for this position (p. 63).

## APPENDIX A

### TABLES AND FIGURES REFERRED TO IN THE TEXT

**Table A1. Production statistics for the Morobe Goldfield, 1926-77**

Source	Ore processed	Average grade	Total gold production§	Duration	Mean annual production†
<b>1. Wau mines</b>					
Golden Peaks 1962-77	1.476 Mt	4.5 g/t	6.570 tonnes	16 yrs	0.411 tonnes
Upper Ridges 1938-41	0.079 Mt	24.3 g/t	1.914 tonnes	4 yrs	0.479 tonnes
Upper Ridges 1952-62	0.176 Mt	5.6 g/t	0.990 tonnes	14 yrs	0.071 tonnes
Golden Ridges 1933-41	0.172 Mt	11.1 g/t	1.914 tonnes	8 yrs	0.239 tonnes
Golden Ridges 1952-65, 1974-77	0.212 Mt	3.8 g/t	0.813 tonnes	17 yrs	0.048 tonnes
Anderson's 1936-41, 1952-57	0.023 Mt	13.0 g/t	0.300 tonnes	10 yrs	0.030 tonnes
Subtotal	2.137 Mt		12.501 tonnes		
<b>2. Upper Edie Creek mines</b>					
Upper Edie/Karuka 1936-41	0.200 Mt	9.7 g/t	1.930 tonnes	6 yrs	0.322 tonnes
Day Dawn 1931-35	0.054 Mt	11.9 g/t	0.640 tonnes	4 yrs	0.160 tonnes
Merri Creek 1955-62	0.004 Mt	1.5 g/t	0.006 tonnes	7 yrs	0.001 tonnes
Day Dawn South 1933-35	0.003 Mt	3.0 g/t	0.009 tonnes	2 yrs	0.005 tonnes
Subtotal	0.261 Mt		2.585 tonnes		
<b>3. Small &amp; medium scale alluvial</b>					
European miners 1926-41	-	-	22.686 tonnes	15 yrs	1.512 tonnes
European miners 1947-77	-	-	8.551 tonnes	31 yrs	0.276 tonnes
PNG miners 1957-77	-	-	3.073 tonnes‡	21 yrs	0.146 tonnes
Subtotal			34.309 tonnes		
<b>4. Dredging</b>					
Pre-war 1932-41	-	-	40.354 tonnes	10 yrs	4.035 tonnes
Post-war 1947-77	-	-	25.366 tonnes	30 yrs	0.846 tonnes
Subtotal			65.720 tonnes		
<b>Total production 1926-41, 1947-77</b>			<b>Abt 115 tonnes</b>	<b>45 yrs</b>	<b>2.558 tonnes</b>

**Source:** Lowenstein (1982)

**Notes:** § Recovered gold; data in Lowenstein's Table 49 not exactly as in this column.

† Production / approximate years of operations.

‡ derived indirectly from Lowenstein Fig.76.

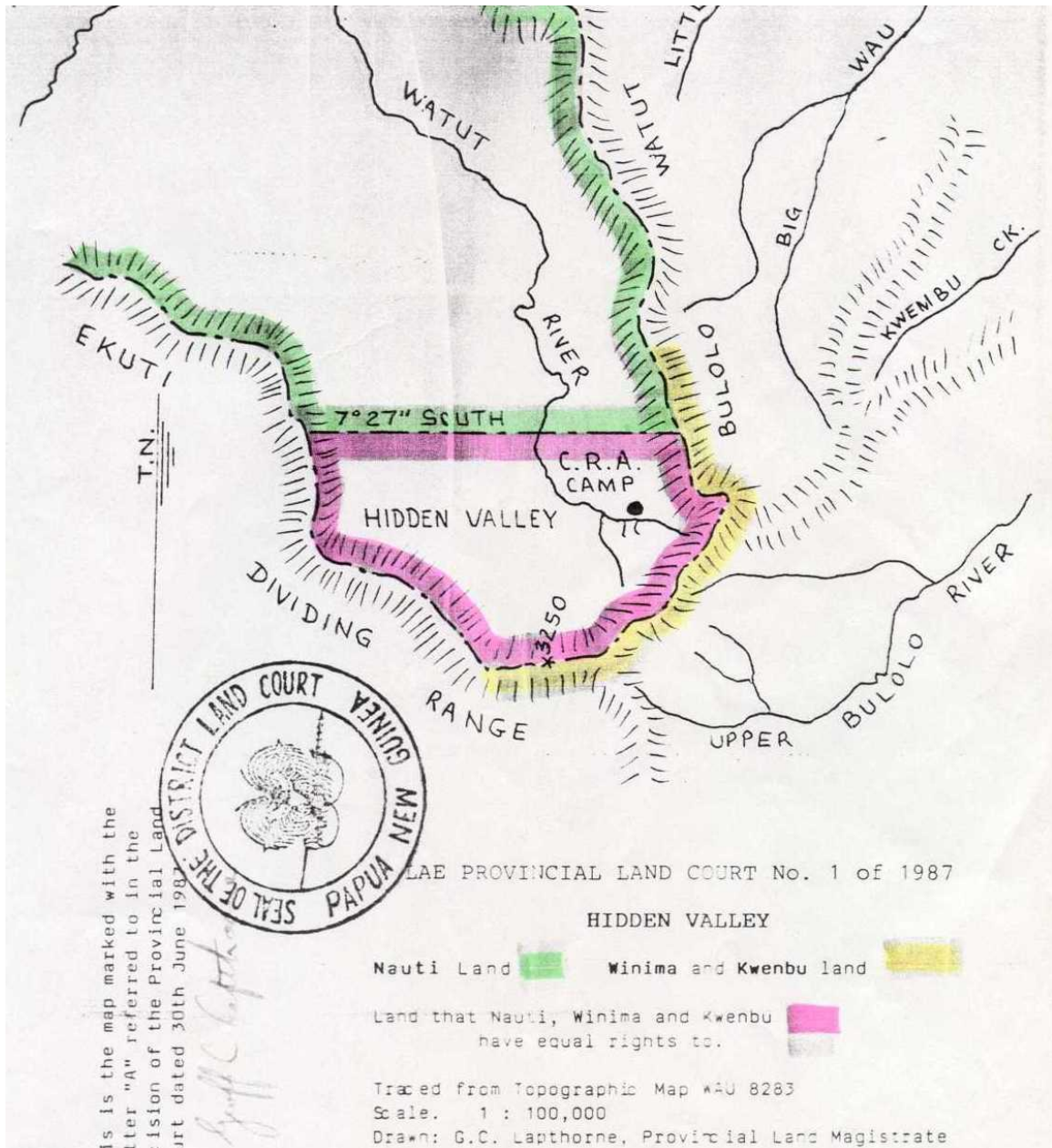


## APPENDIX B

### MAP OF THE HIDDEN VALLEY 'SHARED OWNERSHIP AREA'

This is an excerpt from 'The Provincial Land Court, 6-22 May 1987, before Geoffrey Charles Laphorne, Provincial Magistrate'. The full transcript is presented elsewhere.

The central area highlighted in purple is referred to as the 'Shared Ownership Area'.



## APPENDIX C

### HIDDEN VALLEY EMPLOYMENT TABLES, 1991-1999

Origin	Sub-group*	1991		1993		1997		1999	
		F	M	F	M	F	M	F	M
<b>'Nauti'</b>	Yatavo		1		1		19		8
	Qavaingo		2		2		3	1	8
	Yandiyamango		2		2		2	1	5
	'Supporters'		4		2		32		41
<b>Subtotal</b>		<b>0</b>	<b>9</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>56</b>	<b>2</b>	<b>62</b>
<b>Kwembu</b>	Simani			1	2	2	4	2	17
	Kayoge				2		4		6
	Kazibu						1		3
	?								2
	Non-Biangai		1						1
<b>Subtotal</b>		<b>0</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>2</b>	<b>9</b>	<b>2</b>	<b>29</b>
<b>Winima</b>	Simani				1		2		6
	Kayoge		1					1	4
	Kongawe 1						1		3
	Paro						1		2
	Igulu								1
	?								2
	Non-Biangai						1		2
<b>Subtotal</b>		<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>1</b>	<b>20</b>
<b>Other Biangai</b>	Biawen								2
	Elauru						1		3
	Wandumi								1
	Werewere						2		2
<b>Subtotal</b>						<b>3</b>		<b>8</b>	
<b>Other PNG</b>		0	13	0	19	4	51	6	95
<b>Total</b>		<b>0</b>	<b>24</b>	<b>1</b>	<b>31</b>	<b>6</b>	<b>124</b>	<b>11</b>	<b>209</b>

**Table C1 Breakdown of employees by place of origin, 1991, 1993, 1997 & 1999.**

Sources: 'Current work report on Hidden Valley' 1/7/1991; 'Hidden Valley current employees' 6/3/93; AGF employee listing 30/9/1997; MCG employee listing 30/6/1999.

Note: \* 'Sub-group' means lineage for Watuts, and the landowning solorik to which the employee has the closest affiliation for Kwembu and Winima.

<b>Year</b>	<b>Job Category</b>	<b>Watut</b>	<b>Kwembu</b>	<b>Winima</b>	<b>Other Biangai</b>	<b>Other PNG</b>	<b>Total</b>
<b>1991</b>	Base	?	?	?		?	?
	Camp	9	1	1		10	21
	Cook					2	2
	Medical					1	1
<b>Sub-total</b>		<b>9</b>	<b>1</b>	<b>1</b>		<b>13</b>	<b>24</b>
<b>1993</b>	Base	1	2			8	11
	Camp	4				9	13
	Cook	1				1	2
	Liaison	1	1				2
	Office		2	1		1	4
<b>Sub-total</b>		<b>7</b>	<b>5</b>	<b>1</b>		<b>19</b>	<b>32</b>
<b>1997</b>	Base	4		2	2	19	27
	Camp	51	7	2		19	79
	Domestic					1	1
	Geo					4	4
	Cook					2	2
	Liaison	1	1		1		3
	Medical					1	1
	Office		3	1		9	13
<b>Sub-total</b>		<b>56</b>	<b>11</b>	<b>5</b>	<b>3</b>	<b>55</b>	<b>130</b>
<b>1999</b>	Base	5	1	2	2	23	33
	Camp	54	25	16	3	23	121
	Domestic	1		1		3	5
	Geo					17	17
	Cook	1				8	9
	Liaison	1	2	1	1	1	5
	Medical	1			1	2	4
	Office	1	3	1	1	18	25
<b>1999 Total</b>		<b>64</b>	<b>31</b>	<b>21</b>	<b>8</b>	<b>95</b>	<b>220</b>

**Table C2 Breakdown of employees by job category, 1991, 1993, 1997 & 1999.**

Notes: 'Base' = all blue collar job categories at Wau, 'Camp' = all exploration camp job categories, 'Domestic' = female cleaner at Wau, 'Geo' = graduate geologists, 'Office' = white collar administrative job categories at Wau.

## APPENDIX D

### CURRENTLY AGREED BREAKDOWN OF INTERESTS IN RESPECT OF COMPENSATION PAYMENTS

#### EL677—former CRA tenements

##### Hidden Valley Shared Ownership area (622 ha)

Nauti	
Yatavo .....	20%
Qavaingo .....	10%
Yandiyamango .....	10%
Yakaya .....	10%
Kwembu .....	25%
Winima .....	25%
<b>Total .....</b>	<b>100%</b>

Notes: The primary division in into the court parties ‘Nauti’ 50%, Kwembu 25% and Winima 25%. ‘Nauti’ has been further broken down according to a 20:10:10:10 formula since 1992 (see p. 30).

##### Upper Bulolo Prospect

Winima	
Imebi (Mogoa SERAGOBU) family .....	32.0%
Kamurua (Mogoa SERAGOBU) family .....	30.0%
Saini (Kaia Tiveri SERAGOBU) family .....	30.0%
Ngaluvaia (Ngaluvaia SERAGOBU) family .....	8.0%
<b>Total .....</b>	<b>100.0%</b>

##### Kauzarewe Ridge

Winima (Kayoge)	
Kuyagari family 1A (Mama KUYAGARI) .....	30.0%
Kuyagari family 1B (Kumbe & Ngaeno KUYAGARI) .....	25.0%
Kuyagari family 2A (Wei Ulipari 1 <sup>st</sup> wife) .....	25.0%
Kuyagari family 2B (Wei Ulipari 2 <sup>nd</sup> wife) .....	20.0%
<b>Total .....</b>	<b>100.0%</b>

##### Big Wau prospect

Kwembu	
Simani Group .....	65.0%
Ibi & Philip Koveyanga .....	35.0%
<b>Total .....</b>	<b>100.0%</b>

##### Bulldog Track (5 ha)

Kwembu signatories .....	50.0%
Shared ownership	
Nauti	
Yatavo .....	10.0%
Qavaingo .....	5.0%
Yandiyamango .....	5.0%
Yakaya .....	5.0%
Kwembu .....	12.5%
Winima .....	12.5%
<b>Total .....</b>	<b>100.0%</b>

## **EL497—former RGC tenements**

### **Hamata Prospect**

Nauti

Yatavo ..... 100.0%

**Total** ..... **100.0%**

### **Kerimenge Prospect**

Kwembu

Kwembu Land Trustees ..... 50.0%

Kongawe No. 1 Trustees ..... 50.0%

**Total** ..... **100.0%**

### **Bulldog Track (9.9km)**

Kwembu 8.7km

Simani ..... 29.3%

Kongawe No. 1 ..... 29.3%

Kongawe No. 2 ..... 29.3%

Yatavo 1.2km ..... 12.1%

**Total** ..... **100.0%**

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