**Robert G. Adamson** BSc, MSc Hons (1<sup>st</sup> Geol), MAusIMM, CP(Geo), MMICA

**DOB**: 15 February 1940 **RESIDENCY**: Australia (Sydney, N.S.W.)

## SUMMARY OF PROFESSIONAL EXPERIENCE

- Prior to commencing his independent mineral industry consulting practice in 1993, Robert (Bob) Adamson had a twenty five year professional career (1966-1992) in technical and managerial positions with international mining houses and stock exchange-listed exploration and mining companies
- He has an extensive operational background in mineral exploration and mining for gold, basemetals, diamonds and semi-precious stones, principally in Australia (most States), southern Africa, New Zealand, South Korea, Canada and the Philippines
- Numerous mines and mineral deposits have been visited in many other parts of the world e.g. Spain, Russia, USA and the Caribbean, Papua New Guinea, Thailand and China
- He has recruited and developed several teams of earth science professionals and support staff, and managed these teams for successful outcomes
- His significant professional achievements include participation (technical and managerial) in the discovery and resource definition of several presently operating gold and base metal mines
- Experienced in negotiation, documentation and management of joint ventures in a variety of jurisdictions
- Experienced in the valuation of mineral assets, particularly of exploration properties.
- Experience in corporate governance and the preparation of mining company reports and accounts
- Extensive network of professional relationships throughout the local and international minerals industry, and with financial, stockbroking, legal and accounting associates

### **CAREER SUMMARY**

From 1966 to 1993, Bob Adamson worked initially with government and from 1967, with three international mining houses and a junior exploration company.

He commenced independent consulting in economic geology in 1993 and has been retained by public companies, merchant banks and private investors to report on exploration and mining projects in gold, diamonds, base metals and uranium throughout Australia and worldwide. In addition to his independent commissions he from time to time has sub-contracted as Associate Senior Consultant to firms of consultants to the natural resources industries including RobSearch Australia Pty Ltd, GEOS Mining Ltd, Revaluate Pty Ltd (all of Sydney, NSW) and with Global Resources & Infrastructure (Melbourne, Vic). He also provides telephone consultations to clients of the Gerson Lehrman Group, Austin, Texas.

95 Fox Valley Road, Wahroonga, New South Wales, Australia 2076Telephone +61 (2) 9489 8215Mobile +61 (402) 073 609Email rgadamson@optusnet.com.au

### MAJOR CONSULTING ASSIGNMENTS:

- Associate authorship of a number of Independent Technical Reports for inclusion in IPO prospectuses for capital raisings on the ASX by exploration companies for diamonds (3 IPOs), base metals (2 IPOs) and industrial minerals (2 IPOs)
- Valuations of gold projects in Malaysia and of base metal mines in Peoples Republic of China for IPOs listing on respectively, the Singapore and Hong Kong Stock Exchanges (2011). Valuations for owners of mineral exploration projects in Western Australia, South Australia and the Philippines (2011-12)
- Technical consulting to Pilbara Minerals Ltd (2010 present) for regional geophysical surveys for "blind" metalliferous deposits West Pilbara (WA, Australia). Programme commenced mid 2010 and has discovered a number of deep-seated EM anomalies of which several have been selected for drilling to test targets identified by follow-up ground geophysical surveys
- Technical consulting to Southern Cross Exploration NL and Longreach Oil Ltd (2008 2011); projects include Bigrlyi Uranium (N.T. Australia), Mkuju River Uranium, (Tanzania), Batangas Gold (Philippines)
- Technical reviews and valuations (2009) of mineral deposits in the Harts Range (NT, Australia)
- Independent Technical Expert Witness in proceedings concerning mineral resources/ore reserves/ property valuations in the Supreme Courts of New South Wales (1999 and 2004) and Northern Territory (2009)
- Co-author of Technical Expert Report for a dimension stone project (2007), Kimberley region (WA, Australia)
- Contracted General Manager (2005-2007) for ElDore Mining Corporation Ltd undertaking planning, management and administration of gold-silver exploration, resource evaluation and mine scoping studies in Camarines Norte, Philippines, and management of gold exploration, Fiji
- Authored an Information Memorandum for Nautilus Minerals Inc (2004) describing the exploration potential of submarine massive sulphide deposits in the territorial waters of PNG and other SW Pacific countries, and which lead to Nautilus securing project seed funding from major mining companies
- Consultant Geologist (1999-2001) and Contract General Manager (2002-2004) for Klondike Gold Ltd managing hard-rock gold exploration and drilling programmes in Yukon Territory (Canada)
- Consultant to Australian Nuclear Science & Technology Organisation (ANSTO) concerning commercialisation of proprietary technology in the mining industry (2000)
- Appraisal of gold tailings re-treatment opportunities and quartz-sulphide-gold deposits (1998) in Shaanxi and Henan Provinces, Peoples Republic of China
- Qualifying Engineering Reports on gold and base metal prospects in North Queensland for capital raisings by Barramundi Gold Ltd on the Alberta Stock Exchange, Canada (1997)
- Project management (1995-1997) of gold exploration and drilling programmes for Indochina Gold Limited, Republic of South Korea

- Advice to the Government of Armenia concerning joint venture terms with foreign mining companies (1995)
- Data review, development of exploration concepts and joint venture proposals for stratiform copper-silver mineralisation, Republic of Botswana (1994)
- Review of the Argyle (Western Australia) diamond operations and diamond marketing in relation to the CRA-RTZ dual listing (1994)
- Literature review (1993)of gold production and gold exploration potential in the Peoples Republic of China

### **Other Consulting Projects include:**

- Technical consulting to Cluff Resources Pacific concerning diamond and gold exploration and development (2010)
- Consultant to an oil shale evaluation project in Sweden and Estonia (2008)
- Since 2007, numerous telephone consultations in respect of a wide range of mineral industry topics for clients of Gerson Lehrman Research Group (current GLG status is that of Educator)
- Development of base metal exploration concepts for the Herberton-Chillagoe districts, North Queensland (1998)
- Appraisal of proposed underground gold exploration strategies in the Bendigo goldfield, Victoria (1997)
- Review of ore reserves for a valuation of the Lake Cowal gold deposit, NSW (1996)
- Review and assessment of antimony prospects in northeast New South Wales (1996)
- Management of diamond exploration projects in Arnhemland and Far North Queensland (1995)
- Assessment of resources/reserves for a valuation of the Prince Lyell copper-gold mine, Tasmania (1995)
- Technical specialist for valuations of the Thalanga base metal and Kunwarara magnesite resources and reserves, Queensland (1995)
- Geological reviews for prospective purchasers of major gold projects in the Pine Creek region, Northern Territory (1994)
- Review of reserves/resources and development drilling at the CSA copper mine, New South Wales (1994)
- Diamond project appraisals in South Africa and northern Russia (1993-94)

### PRE-CONSULTING CAREER HISTORY

From 1987 to 1993, Bob was Managing Director of **Cluff Resources Pacific Limited** (Sydney), a petroleum, gold, and diamond exploration company listed on the Australian Stock Exchange. Under his management, the company's petroleum exploration interests were largely farmed out and a CIP gold plant and dam leach facilities to treat gold tailings in central NSW were successfully commissioned. Also, the Dicks Reward underground gold mine was rehabilitated and a tribute mining operation established. In 1990 he arranged a major share placement which funded exploration of the diamond fields at Copeton and Bingara, northern NSW. Geological concepts developed in this work, and with the NSW Geological Survey, lead to a fundamental re-interpretation of the geology and occurrence of

diamonds in eastern Australia. Bob arranged and supervise valuations and manufacturing tests in Europe and Asia of gem quality diamonds recovered by the bulk sampling programmes.

While with the Cluff group, he was appointed a Non-Executive Director (later Exploration Director) of **Cluff Resources Zimbabwe Limited**, a company listed on the Zimbabwean Stock Exchange. During this time the Freda-Rebecca Gold Mine (open pit, CIP and heap leach) was developed and became Zimbabwe's largest gold producer. As Exploration Director, he identified the prospect on which the Peach Gold Mine was developed in 1993. Bob resigned from the Cluff group in March 1993 in order to establish his independent minerals industry consulting practice.

In the period 1981-1987, he was Manager Minerals Division of **BP New Zealand Limited**, and engaged in exploration for epithermal gold and silver, alluvial gold, tungsten and molybdenum throughout New Zealand. Bob early recognised the potential of the historic Macraes gold-tungsten field and secured a major surrounding tenement position for BP. He also appraised a number of epithermal gold prospects in Papua New Guinea on behalf of **BP Minerals International Limited**.

From 1975 to 1981, Bob was employed by **Tsumeb Corporation Limited** in Namibia, initially as Chief Mine Geologist and from 1978, as Superintendent of the Geology Department. His responsibilities included the management of some 25 geoscientists, the grade control and ore reserves systems for three underground mines producing 750,000 tpa copper and lead ores, and for mineral exploration projects throughout the country. Major achievements included the implementation of computer ore reserve systems, modernisation of a large drilling division, exploration and development of the underground Asis West copper-lead mine and the discovery and underground bulk sampling of the Tschudi copper-silver deposit. He was a member of the team that managed the acquisition and redevelopment of the major Otjihase underground copper-silver mine. He also initiated acquisition and drilling of the Ondundo gold prospect and set up a major copper exploration joint venture in northern Namibia involving Tsumeb Corporation and Goldfields. Bob was for some years Tsumeb Corporation's representative on the Mining Law Committee of the Chamber of Mines of Namibia.

Between 1969 and 1975, Bob was Senior Geologist with **Newmont Proprietary Limited.** He supervised exploration programmes for nickel sulphides in the Kalgoorlie and Norseman areas of Western Australia during 1969-71, and for uranium and base metals in the Murchison district. In 1971 he participated in a review of the Narbalek uranium deposit (Northern Territory) during which he relogged most of the drill core. During 1972 and 1973, Bob was Project Field Leader for the geological definition and initial resource drilling (first 1 million ozs) at the now Telfer Gold Mine (Western Australia). In the course of this project, he was associated with the first application of the reverse circulation (RC) drilling in Australia. From 1973 to 1975, he was Newmont's Managing Geologist (New Zealand) conducting epithermal gold exploration on the Coromandel Peninsula. He sited the initial drill holes to explore the opencut potential of the now Martha Gold Mine at Waihi. In 1975, Newmont Mining Corporation transferred Bob to its joint venture mining operations at Tsumeb, South West Africa/Namibia.

He was from 1967 to 1969, employed as a Senior Geologist by **CRA Exploration Pty Limited** engaged firstly, in porphyry copper exploration in northern New Zealand and subsequently, in nickel exploration in the Yilgarn Craton, WA.

Bob's professional career began in 1966 as a Field Geologist with the Greymouth Office of the **New Zealand Geological Survey** conducting regional geological mapping in the Westland region of New Zealand and site surveys for hydroelectric dam proposals in South Island.

During the summer field seasons of 1964-65 and 1965-66, as a member of the NZ Antarctic Research Programme, he carried out geological mapping in the Nimrod Glacier and Priestley Glacier regions of Victoria Land, Antarctica.

### QUALIFICATIONS AND PROFESSIONAL AFFILIATIONS

Robert G Adamson graduated B.Sc. in geology and chemistry from the University of Canterbury, New Zealand in 1963 and in 1966 was awarded M.Sc. with First Class Honours in Geology from the same university.

Bob is a Member of the Australasian Institute of Mining and Metallurgy (elected 1973). He was accredited Chartered Professional (Geology) in 2002 and from 2005 to 2010 was a member of the Institute's Board of Chartered Professionals. He presently serves on the Institute's Publications Committee.

He was elected a Member of the Mining Industry Consultants Association in April 1998, and elected to the Board of the Mining Industry Consultants Association in December 2011.

Bob was from 1978 to 1981, a committee member of the Chamber of Mines of South West Africa/Namibia and from 1983 to 1987, the President of the New Zealand Mining & Exploration Association Inc.

From 1988 to 1994, he was a Fellow of the Australian Institute of Company Directors.

From 1989 to 1993, he served as a committee member of the NSW Chamber of Mines.

# CURRENT DIRECTORSHIPS (ASX-listed companies)

Pilbara Minerals Limited

since 2010

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August 2012