Liamu Igneous Complex, PNG: significance for late Miocene-Pliocene mineralisation along Papuan Peninsula and PNG tectonics

Dr RH Findlay (BA Hons Oxon; MA Oxon: PhD Auckland; MAIG), Director, Montagu Minerals Mapping Pty Ltd, 141B Gordons Hill Road, Tasmania 7105, Australia. Email: mmmapping@hotmail.com

Papua New Guinea is a well-known late Miocene-Pliocene Au-Cu province at the leading edge of the Australian Plate. The deposits occur as intrusive and sub-volcanic porphyry systems with attendant structurally controlled epithermal Au reefs and, in appropriate rocks, skarn deposits. The majority of exploration and discovery has been focused in the PNG Highlands region between Frieda River (west) and Wafi-Wau-Bulolo (east); Manus Island and New Britain have also shown strong prospectively.

Although the rich Tolukuma mineral district of Central Province had been fully identified by 1989 (mining began at Tolukuma in 1993), other than at Mt Kodu limited attention has been given to Central Province and the Papuan Peninsula, dominated as they are by Cretaceous Owen Stanley Metamorphics (OSM) overthrust by the broad and extensive Papuan Ultramafic Belt (PUB). However, in the PUB, incompatibilities in the 1:25000 geological mapping stimulated examination of legacy data and in 2010 led to discovery of the 45-?75sqkm Liamu Igneous Complex, a 6Ma alkaline to shoshonitic volcanic-intrusive system prospective for Au-Cu. This discovery initiated additional studies of legacy data and topographic maps, enabling identification of a string of areas along the Peninsula that consist of certain targets for young (?Pliocene) intrusives within the PUB and adjacent Cretaceous-Eocene basalts. That is, the Papuan Peninsula to Milne Bay region must be regarded as a young mineralised Au-Cu fairway potentially comparable to the better-known regions of the PNG Highlands.

Additionally, these young intrusives are clearly associated with fault-controlled Avebury-style nickel occurrences in the PUB and, in the limestone country near Mt Suckling, suggest the possibility of skarn deposits.

The entire PNG-wide young mineralised porphyry system crosses numerous different terranes, and with the recent discovery of similar rocks in the Finisterre Mountains, seems at odds with simplistic plate tectonic modelling thus demanding more cautious considerations of PNG's plate-tectonic history. *300 words.*