

GREENFIELD EXPLORATION PROSPECTS OF OROGENIC GOLD MINERALIZATION IN AND AROUND LAWA AREA, NORTH SINGHBHUM MOBILE BELT, EASTERN INDIAN CRATON

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ABSTRACT

Palaeo to Meso proterozoic North Singhbhum Mobile Belt (NSMB) refers to an assembly of The multiply folded, low to medium grade meta-sedimentary and meta-igneous rocks of Proterozoic age (1.0–2.4 Ga) lying between the Archaean Singhbhum Craton also known as Archaean Cratonic Core Region (ACCR>2.4 Ga) in the south, and the Meso/Neo-Proterozoic (0.9–1.7 Ga) Chotanagpur Gneissic Complex (CGC) in the north. The NSMB and the CGC are separated by the Tamar–Porapahar–Khatra–Fault (TPKF), also referred to as the Northern Shear Zone (NSZ). Further to the south, the NSMB and the Singhbhum Craton is separated by the Copper Belt Thrust (CBT), referred as the Southern Shear Zone (SSZ). In the northern part of the NSMB, mica schists fringing the CGC document a northward increase in strain and temperature (greenschist to amphibolite facies).

The geological set up of the North Singhbhum mobile belt bears a close resemblance to the other major gold producing orogenic metamorphic/mobile belts. North Singhbhum Mobile Belt indicates a complex history of sedimentation, magmatism, deformation and metamorphism. The recent finding of important gold prospects within the NSMB has generated a huge debate over the exploration policy, which needs to be revived to achieve considerable targets in terms of the finding of new gold deposits. The NSMB holds all the critical fundamental controls on regional scale which are very important for the formation of gold deposits. The presence of crustal scale shear zone in any orogenic mobile belt has a primary control on the gold enrichment process as it provides the conduit for the progressive/repetitive transfer of gold from the deeper part to the all important shallow level seismogenic regime (Brittle ductile regime). North Singhbhum Mobile holds all the other regional scale controls in terms of lithology, structure, metamorphism and tectonic setting, suitable for the exploration of gold mineralization.

KEYWORDS: Gold Mineralization, NSMB, Archean, Craton, Singhbhum Shear Zone