The Brahman Au Prospect is located 37 km WSW of Charters Towers at 20°09’S, 145°58’E; Charters Towers 1:250 000 map sheet (SF 55-02).

DISCOVERY HISTORY
Gold was discovered in the Charters Towers district in 1871, with two main periods of lode mining during 1880-1910 and 1931-1951. Until 1986, nearly 7 Moz of Au were produced from structurally controlled lodes, containing Au with quartz, pyrite, galena and sphalerite, within the Ravenswood Granodiorite Complex (Clarke and Paine, 1970). In the 1980s, the discovery of high-grade epithermal Au mineralization at Pajingo (Cornwell and Treddinnik, 1995) and the recognition of the potential of the bulk, low-grade porphyry breccias at Mt Leyshon (Orr, 1995) led to substantial exploration S and SW of Charters Towers, where cover is generally thin. In 1995, Mt Leyshon Gold Mines commenced a program of exploratory air core drilling in a 12 500 km² area of generally deep cover and Tertiary basalt cover to the N and W of Charters Towers (Figure 1; Orr, 1995). In 1996, the company intersected 4 m of 1.5 g/t Au associated with quartz veins in granitic material at the Brahman prospect, 1.5 km SE of the shallow Powthalanga Au workings. Follow up work in 1997 found anomalous Au concentrations in saprolite over a 700 x 700 m area, but no economic resource.

REGOLITH
Basement geology consists of Ordovician-Devonian magnetite-bearing and non-magnetite-bearing granites intruding Cambrian-Ordovician biotite schists of the Charters Towers Metamorphic Complex. Mesothermal vein mineralization, of the Charters Towers style, occurs at the intrusive boundary of magnetite-bearing granitoids and schists. The mineralization consists of Au in quartz veins with some pyrite, galena and sphalerite (Clarke and Paine, 1970). The Palaeozoic rocks are overlain unconformably by flat-lying Late Tertiary Campaspe Formation sediments and Quaternary alluvium. Sediments of the Early Tertiary Southern Cross Formation occur several kilometres to the E (Figure 1).

MINERALIZATION
At Brahman, an intersection of 1.5 g/t Au over 4 m has been recorded at the intrusive boundary between the magnetic Ordovician-Devonian granodiorite and the schists of the Charters Towers Metamorphic
Complex. The mineralization is associated with mesothermal quartz veins of the Charters Towers-style. However, the mineralization at Brahman, and at the shallow Powthalanga Au workings in granite about 1.5 km NW, lack the significant base metal contents generally associated with Charters Towers style mineralization.

REGOLITH EXPRESSION

Mineralization in fresh magnetic granodiorite at Brahman only attains a grade of 0.04 g/t Au. However, a low grade Au anomaly (>2 ppb) forms a 700 x 700 m, 10 m thick horizontal blanket at approximately 15-20 m depth within the saprolite and into the overlying residual clay zone. It is centred about the 4 m intersection of 1.5 g/t Au in saprolite. Similar dispersion occurs at the base of the saprolite (Figure 2). Anomalous Au, As, Cu and Pb are also associated with pisolith-rich (Fe-rich) samples from the top 6 m of drilling (Figure 3) and suggest that pisolith sampling would have identified the anomaly. The distribution of Au through the regolith profile at Brahman is similar to that found in the Yilgarn Craton of Western Australia. Here, anomalous Au may be found in the ferruginous, lateritic duricrust and at several horizons within the saprolite (including, at its base) with a zone of depletion between the lateritic and upper saprolitic enrichments (Butt, 1988). However, at Brahman, abundances are 2-3 orders of magnitude less than in the Au deposits of the Yilgarn Craton and all the material above the enrichment in the upper saprolitic zone is transported. Thus, at Brahman, the Au anomaly in the pisolithic horizon of the Tertiary Campaspe Formation implies that Au has been hydromorphically dispersed.

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The management and geological staff of Mt Leyshon Gold Mines Ltd.

during the late 1990s, especially Tom Orr, supplied samples, results and plans of the Brahman deposit.

REFERENCES


### SAMPLE MEDIA - SUMMARY TABLE

<table>
<thead>
<tr>
<th>Sample medium</th>
<th>Indicator elements</th>
<th>Analytical methods</th>
<th>Detection limits (ppm)</th>
<th>Background (ppm)</th>
<th>Maximum anomaly (ppm)</th>
<th>Dispersion distance (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary mineralization</td>
<td>Au</td>
<td>GFAAS</td>
<td>&lt;0.0001</td>
<td>&lt;0.0001</td>
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</tr>
</tbody>
</table>

GFAAS = Graphite furnace AAS after aqua regia digest
ICP determination after treatment with HCl, oxidant and solvent extraction