2. DISCUSSION

The magnetic characteristics of most of the rocks within the study area have been documented by Roach (1992) and Richardson and Roach (1994). The data in the table below are taken from Roach:

	Magnetic Susceptibility ($x10^{-3}$ SI)	
	Range	Mean
Tertiary Basalt	variable	>10
Jurassic Dolerite	variable	10
Permian Sediments	0 - 0.02	~0
Blue Tier Granite	0.02 - 0.15	0.05
Scottsdale Granite	0.02 - 0.20	0.12
Pyengana Granodiorite	3.0 - 10.0	8.0
	0.15 - 0.3	0.22
Mathinna Metasediments	0.06 - 0.32	0.15

(The distribution of the magnetic rocks is best seen in the slide of the coloured, linear, total magnetic intensity).

The highest magnetic relief in the area is produced by sills of Jurassic and Tertiary volcanics; these rocks also occur as talus deposits and in drainage channels where they produce variable, erratic, magnetic relief. The magnetic phase of the Pyengana granodiorite produces a prominent magnetic response. Sediments adjacent to the Blue Tier granite (adamellite) are 'magnetic' as a result of (inferred) contact metamorphism (seen on the St Helens map sheet). Northeast trending dykes (Devonian?) are evident on the St Helens and St Marys map sheets; one southeast trending Jurassic dyke is located just to the west of the Tower Hill gold mining centre. The Mathinna Beds contain some magnetic lithologies which exhibit magnetic relief up to about 40nT (eg adjacent to the Scottsdale batholith). Some of the relief is very low and on the interpreted plans these anomalies are shown as 'trend lines'. The latter are probably very difficult to identify in the field; the former should be recognisable.

There are several low-amplitude 'broad' magnetic anomalies over the sediments (most clearly seen in the slide of the non-linear total magnetic intensity). These have been attributed (Roach 1992) to sub-surface granodiorites similar to the magnetic phase of the Pyengana granodiorite. This is considered to be a valid interpretation; an alterative source could be metamorphosed sediments overlying non-magnetic granitoids. The strongest of these 'deep' anomalies (~80nT) is in the extreme southwest. The source is interpreted to be at depth of 1 - 2km; sediments overlying this, and other 'deep' features, are inferred to be 'grossly' anticlinally folded ie along axes f_1 - f_7. Smaller scale fold structures are evident in the