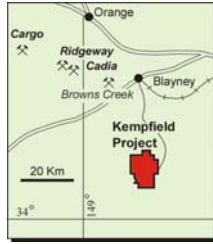


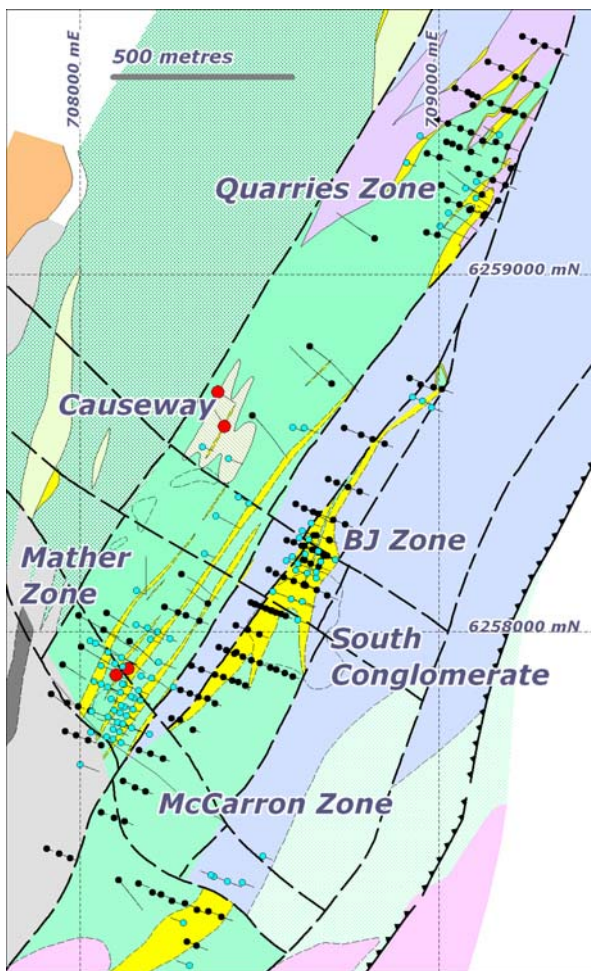
## Geology

### Regional Geology

Kempfield lies within the Lachlan Fold Belt, straddling the boundary between the Molong High to the west, and the Hill End Trough to the east. The boundary between these two units is an imbricate thrust fault zone known as the Copperhania Thrust.



Mineralisation at Kempfield is hosted in felsic volcanic rocks known as the Kangaloolah Volcanics. These have been infaulted and folded into Middle Ordovician meta-sediments of the Coombing Formation, along the Copperhania Thrust. The Coombing Formation meta-sediments include mudstone, fine quartz sandstone, and actinolite schist. To the south the Kangaloolah Volcanics are locally terminated by the intensely foliated and marginally altered Kempfield Granodiorite of Silurian age.



The Kangaloolah Volcanics belong to the Late Silurian Mumbil Group, comprising sub-marine, carbonate-shale facies interspersed with extensive felsic volcanic piles. These grade conformably upwards into turbiditic sandstone and siltstone sequences in a generally deepening depositional environment. These turbiditic rocks are known as the Campbells Formation and at Kempfield comprise siltstone, sandstone and andesitic tuff.

All the above rocks near Kempfield are now metamorphosed to lower greenschist facies.

### Local Geology

In the project area the oldest (Ordovician) rocks of the Coombing Formation comprise tremolite schists, biotite hornfels, a porphyritic andesite and black carbonaceous slate. Unconformably overlying these rocks are the Kangaloolah Volcanics, a felsic volcanic-derived sequence of sediments and minor volcanics which can be sub-divided into three units;

- a sequence of fine grained and quartz-phyric tuffaceous rocks separated by a fault from;
- volcanoclastic sedimentary rocks with high background in lead, zinc and barium. In the upper part of the sequence is minor allochthonous crinoidal limestone/dolomite and massive barite, that grades up into;
- barren siltstone with low background lead, zinc and barium.

The mineralised barite-rich horizons occur near the boundary of the two latter units.



### Mineralisation

The geology and mineral assemblage is consistent with the distal portion of a volcanic-hosted base metal sulphide deposit or VHMS.

The primary (sulphide) mineralogy comprises pyrite, chalcopyrite, galena, sphalerite, argentite, tetrahedrite, native silver (in tetrahedrite) and pyrargyrite. Silver is present in tetrahedrite, native silver, pyrargyrite and argentite. The gangue is primarily barite with lesser quartz and sericite. In the oxide zone chlorargyrite has been identified.