

Ore solutions are considered to have risen along tension faults in the Renison Bell anticline and replaced successive carbonate beds adjacent to the faults. The source of the hydrothermal solutions is considered to be the granite, the faults acting as conduits.

Dave Patterson of the University of Tasmania is writing a Ph.D. thesis on the mineralisation at Renison. His research indicates that the average filling temperatures of the ore solutions in the replacement orebodies was 350°C (at lkb) at a pH of 4.3, while the pH of the hydrothermal solutions in the conduits has been estimated as being 3.5. He also considers that Sn is divalent in hydrothermal solutions which means that granite magma, though poor in Sn, can give replacement deposits, because all the Sn goes into the aqueous phase. He further suggests that the granitic solutions reacted with the mafic or ultramafic rocks at Renison Bell, Razorback and Cleveland giving rise to the presence of copper in the orebodies.

The dolomites appear to be ideal beds to host replacement orebodies, being porous and readily dissolved by acid solutions. It is significant that Patterson's research indicates that there was an increase in the pH of the hydrothermal solutions from the Bassett-Federal conduit (pH 3.5) to the dolomites (pH 4.3). However, carbonate rich mafic or ultramafic rocks may also host replacement orebodies adjacent to hydrothermal conduits, particularly in the absence of dolomites.

4. MINING

The flat back cut and fill stoping method is used in all orebodies. In the more flatly dipping carbonate replacement orebodies, pillars of ore are left to provide hanging wall support and to limit the roof spans. Development waste rock and concentrator tailings are used as stope fill material.

The underground operations are fully mechanised using rubber tyred diesel powered equipment. 20 tonne capacity 300hp trucks are used for carting both waste rock and ore. Entrance to the mine is by means of two adits declined at a gradient of 1 in 9.