



CADNIA & THE SLIDING ROCK FORMATION



WOODEN SUPPORT IN ADIT



WOOD TIMBERING IN VENTILATION SHAFT (1/3)



RESTORED ROOF OF THE ASSAY OFFICE

# The Sliding Rock Mine

## GEOLOGICAL AND HISTORICAL ACCOUNTS BEFORE ABANDONMENT

### 1871 to 1876 . 1947

#### FROM COMPANY RECORDS

**The Sliding Rock Mining & Smelting Company:** Operations began in 1871, and the mine operated intermittently up until 1907; after that, the mine remained idle ever since; copper production was only confined to the 1871 to 1876 period, with deeper development attempted but unsuccessful (Dickson, 1944:6). During the visit on December 14th 1875, a correspondent was allowed access to the below-ground workings of the mine. To descend into the main workings, it was required to use one of two iron cages which were in constant work; one ascends, and the other descends, decent took 30 seconds (South Australian Chronicle and weekly mail, Saturday 14th December 1875: 14, Trove 2022). Rails were used to drive iron trucks to move copper-bearing clay or ore; these were then driven to the foot of the main shaft and moved into the iron cage to be hoisted up to the surface; the main chamber was and maybe still is layered with flat iron sheets for the ore carts to be tuned onto other tracks with. The adit has been driven to around 200 feet; blasting isn't required as the lode is a softer formation which consists of clay; during the time of this visit, virgin copper was seen in the walls, the chambers were very warm despite the ventilation shafts (South Australian Chronicle and weekly mail, Saturday 14th December 1875:14, Trove 2022).

**The Great Extended Sliding Rock Mining Company:** The Great Extended Sliding Rock Company was started in 1872 based on the assumption that the ore lode extended outwards from the Sliding Rock's company lease; this wasn't a new premise as the owners of the Bon Accord Mine in Burra also thought that the 'Monster Mines' lode extended beyond their lease as well (Klaassen, 1986:50). The Great Extended Sliding Rock Company during the first 3 months of ownership tried to cut the Sliding Rock Mining and Smelting Companies main lode to the east and to the west, the results were not promising (Klaassen, 1986:53). The 'Great Extended' did not have the financial resources to secure any pumping equipment as they were not making enough, few shareholders attended their meeting at the Adelaide Town Hall in 1873 on September 29th, that year was the end for the 'Great Extended' Sliding Rock Company (Klaassen, 1986:55-56).

**Tasmanian Copper Company:** The Sliding Rock's operations started up again in 1899 after a long period of idleness (The Advertiser, June 27th 1899). Records from the Tasmanian Copper Company reported rich patches of malleable copper at 80-90%, this was discovered early on when the company got hold of it from the previous Sliding Rock Company, estimates of future ore percentages dropped to 3-4%, the ore was reported to be 50-60 degrees to the east (Dickson, 1944:7). The Tasmanian Copper Company also brought the Blinman Mine in the 1900s for £850 to revive the operation (Pearl, 2019:3). The Sliding Rock Mine was running into trouble during that time on top of falling copper prices and the death of Captain Henrie, The Tasmanian Copper Company was defiantly running into major problems as all three were happening around the same time (Pearl, 2019:3).

#### A WILJARA SACRED SITE

When the Town was proposed with the plan drawn up by Mr McKay, it was given the name Cadnia, to the people already living there; this was unexpected (Klaassen, 1986:82). The area the town and mine were built upon is known in the sacred Wiljara myth, this location is associated with adult male initiation rites of the Adnjamathana (Klaassen, 1986:83). The name Cadnia translated to Rock and was very appropriate for the location with the rocky canyons and river beds; the Sliding Rock creek and Sliding Rock Mine already existed, so it would have made a lot more sense to use Cadnia instead (Klaassen, 1986:83). If the location and association of the site with the Wiljara myth were known to Mr McKay it was a nice gesture from him to the local Adnjamathana people but at the same time this mining site and the town were the first records of a European mining exploration project on an Aboriginal sacred site in the Flinders Ranges (Klaassen, 1986:83). Despite its location several Adnjamathana men worked for the mine in its later years (Klaassen, 1986:83). The townspeople refused to use the name Cadnia and continued to call it Sliding Rock, it has stayed that way ever since, even the Lands Department still calls it Sliding Rock, the name Cadnia has almost been completely forgotten (Klaassen, 1986:83).

#### THE ORE LODE & IT'S GEOLOGY

The mine is located in a limestone basin in a strike valley bordered by steep massive quartzite (Dickson, 1944:1). The fractural fold patterns in the area are visible on the surface unlike the faults which remain buried and are only visible through stratigraphic and structural evidence visible within the rocks themselves (Dickson, 1944:4). There is an anticline fold present within the mine area, it has a N. 70° W trend, the northern section is asymmetrical while the southern section dips at around 50° (Dickson, 1944:5). The lode was said to have been from as wide as 10ft to 2ft and was striking in a north direction at 20 degrees and underlying to the east (Ward, et al, 1918:82). The ore lode visible in the mine has been fractured by the Sliding Rock Fault, Fault movement has resulted in "east block north" movement and formed a downthrow which formed accumulation of the lower limestones in the basin upstream from the mine (Dickson, 1944:5).

Majority of the visible copper showed up as native copper, cuprite, chalcocite, and malachite and less prominent was, black copper oxide and copper sulfides which were also present in the deposit, cobalt has been noted to the south of the historic workings (Dickson, 1944:6). Copper minerals have formed in streaks and aggregates within tenacious brown clay which sits within the Sliding Rock fault zone within sandstones and calcareous shales (Dickson, 1944:6-7). Kaolinized country rock is visible in fault gouges within the clay, the clay outcrop is poor for copper formation but deeper below the surface the deposit gets richer at 30 feet deep (Dickson, 1944:7).

**Copper Lode Formation:** Mineralization of the deposit has been a matter of controversy, there are two main supported hypotheses, **(1)** ascending hypogene solutions have been deposited within an oxidizing environment, **(2)** descending solutions deposited in a reducing environment, more research will need to be done to understand the deposit (Dickson, 1944:7). The lack of lava flow deposits eliminates its possible origin from a volcanic source; the localization of copper values closer to the water table might suggest the native copper originated from other copper minerals (Dickson, 1944:7).

#### ABANDONMENT

Post-closure of mines can create environmental issues and ongoing health and safety risks, despite some of the visible risks mines can be reopened for tourism and mining heritage, recreation, agriculture, and plantation forestry (Ashby and Van-Etten, 2021:11). The Sliding Rock Mine and Cadnia are open to the public as access is granted through the Private Warraweena Conservation Park, there is a possible planned restoration process and additional structural support to buildings nearing collapse. In some buildings graffiti is also a problem, some of it is from the 1800s but there are also a lot of newer names and dates.

**Mining Review #1 - 1917:** The mine had been abandoned for some time before it was visited again in 1917 for a mining review; it was full of water, almost to the surface during that time (Ward, et al, 1918:82).

**Copley Coalfields:** The Sliding Rock Mine was withdrawn from the Mining Act, 1930-1941 and was then declared as a waterworks reserve where a pumping plant was installed in pump shaft (A) to run water to the Leigh Creek coalfield and their mining operations (Dickinson, 1944:45). The tests from No. 7 pilot bore produced 10,000 gallons per hour of clear water which it produced for 72 hours, this would satisfy the requirements for the coalfield which only needs 4,000 tonnes a week (Dickinson, 1944:62). Because of these results an emergency backup supply was being located as silt contamination is an issue in pilot bore No. 7 (Dickinson, 1944:62).



CADNIA & THE SLIDING ROCK MINE CHIMNEYS



COPPER TRACE MINERALS: AZURITE & CHRYSOCOLLA



DUCERS SLIDING ROCK (SLAG)



CADNIA - SEPTEMBER 30TH 2021 . CELINA SLATTERY

#### TIMELINE



#### LEARNING FROM ENTANGLED ENCOUNTERS

### South Australia, The Copper Kingdom

Celina Slattery, College of Humanities and Social Sciences, Flinders University  
 Australian Archaeological Association Annual Conference: December 7th to 9th 2022 . Darwin

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