# WALLACE'S SMELTING WORKS

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## Location

OFF MARTINS ROAD BETHANGA, TOWONG SHIRE

## Municipality

TOWONG SHIRE

## Level of significance

Heritage Inventory Site

## Heritage Inventory (HI) Number

H8325-0006

## Heritage Listing

Victorian Heritage Inventory

Hermes Number 11032

Property Number

## History

Heritage Inventory History of Site:
With the discovery of copper at Bethanga, Harris and Hollow (a mining partnership from Rutherglen) built a smelting works on the flats at Lower Bethanga, with a view to smelting copper for the public. The first furnace of the Great Eastern Copper Smelting Works was opened with great ceremony in January 1878. Two further furnaces were added by mid-year.
As mining entrepreneurs went, Harris and Hollow (themselves working miners made good) had fairly altruistic intentions and won general support from the Bethanga miners. But their intentions were thwarted when the Hon. J.A. Wallace, MLC (the North-east's mining entrepreneur extraordinaire) took an interest in the Bethanga mining scene. Wallace purchased important mining leases and major mines at Bethanga and built his own smelting works to treat their ore. His three furnaces were complete by June 1878, but Wallace shut them down within two months, having successfully divided the loyalties of the Bethanga miners. Harris and Hollow had been forced to follow Wallace's lead, buying mining leases and smelting only for their own mines. Bethanga was now without a public smelting works.
Both smelting works employed the Welsh process: the ore was burnt in open clamps (heaps) or kilns, close to the mines, and the residue was then concentrated in a reverberatory furnace at the smelting works. The product, copper regulus, was sent to Europe (England, Wales, or Germany) for further processing.Wallace and Co. took over Harris and Hollow's Bethanga Gold Mining Co. in 1883, resulting in the formation of the Wallace Bethanga Co. It was proving almost as difficult to smelt copper from the Bethanga ore as to retrieve gold from it. But Wallace was determined to conquer it, no matter what the cost. In 1880, he had had very expensive plant constructed , two large boilers, 35-hp steam engine, large air cylinder, and two furnaces, in order to experiment with Holloway's process of ore treatment. Crude ore was melted in a cupola (or low-blast) furnace, then transferred to a 'Wallace's Patent Converter' blast furnace with flux, to achieve concentration of the copper into regulus, which was still shipped to Europe. The Holloway's experiments went on for three years, but were not a success.
In 1884, Wallace brought three smelting experts from Wales to supervise further trials. New works were again commissioned: an improved reverberatory furnace and alterations to the old blast furnaces. But the Welshmen had trouble with 'bears' - congealed lumps of metallic iron which formed in the furnaces during smelting. The problem was due to the lack of proper fluxes, that is, other ores to mix with the Bethanga ore to achieve effective smelting.
The Welsh experiments (1881-5) failed, and Wallace wheeled in a Dr Wunderlich to conduct a new 'wet process connected with electricity'. This involved placing cakes of regulus in a solution of sulphate of iron and passing an electric current through them, after which they were again smelted. The experiment cost £2,500 and failed to eliminate the 'bears', as did an improved vertical furnace installed in 1887 at the instigation of yet another of Wallace's 'sanguine inventors'.
The Wallace Bethanga venture (mining and smelting) was costing more than £1,000 a month for working expenses alone. Wallace complained that he was losing money, but was determined not to give in. A new calcining process commenced in 1885 (setting the ore to burn for a month or more in large open heaps) set Bethanga's mining community in further opposition to Wallace (there was already strong resentment over his monopolisation of the field). Wallace's smelting works were situated just north of the upper township, and the choking fumes from his open calcining kilns added injury to insult. Strong objections were lodged. Wallace was of the opinion that the townsfolk, rather than the kilns, should be removed, but in 1887 the Wallace Bethanga Co. was prevented from burning the ore in open kilns.
The Wallace Bethanga Co. was in liquidation in 1887, having spent countless thousands of pounds and paid not a single dividend. A year later, Wallace's attempts to float a new company in London attracted the attention of the Metal Extraction Co., which sent its own representatives, 'three experts from the old country', to try out their patent process of chlorination under pressure, which inevitably failed, proving too costly to pursue.
Having spent more than ten years trawling the globe for experts to tame his Bethanga 'bears', Wallace's problem was finally solved by his own works manager. Thomas Martin knew the Bethanga ore better than anybody. The process that finally unlocked the Bethanga ore was a modification of the oldest chlorination process, the Plattner system or 'wet process', which used open vats. (Chlorination in closed vats by means of dry gas was one of the many techniques already tried and rejected.) He also found the reverberatory furnaces to be faulty, not properly and evenly roasting the ore, and had them rebuilt in 1894. Wallace had his solution at last.
The Wallace Bethanga Co. finally attracted a takeover, and in 1895 the Bethanga Goldfields Ltd was formed. Bethanga was once again a goldfield; copper was produced merely as a payable by-product.

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