



Industrial minerals in Tasmania — Kaolin

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INTRODUCTION

Kaolin suitable for use as a paper filler has been extracted from several places in Tasmania. At the present time kaolin is produced at Tonganah, near Scottsdale. No clay suited to coating paper has been located within the State; all coating clay is imported.

SURGES BAY

Kaolin was mined at Surges Bay from 1944 to 1959. The source was a weathered alkaline intrusive rock. The clay was of sufficient quality to be used as a paper filler, and mining only ceased due to the exhaustion of the deposit.

The kaolin was formed from the weathering of feldspars in the alkaline intrusive rock, part of the alkali syenite suite cropping out in the Cygnet area, which have been described by Edwards (1947). The weathered Cretaceous intrusive rock is overlain by a band of Fern Tree Mudstone (of Permian age) and this has protected the clay from erosion. The mudstone itself has weathered to a white, gritty clay and the contact between the two is not clear to the untrained eye.

When mined, the top two metres or so of "gritty clay" was discarded. The underlying clay contained pieces, chunks even, of only partially weathered feldspars which were mined along with the clay. No separation was made at the mine of weathered/unweathered material.

Extraction of the clay began in 1944 on ML 1M/41 of 5 acres by the Nonmetallic Minerals Syndicate NL. Extraction was initially 30 tonnes or so a week, and the work employed five men (Hughes, 1948). After fifteen years, the "pod" of kaolin was showing signs of being exhausted. Six holes were drilled; these showed that the limits of the weathered porphyry had been reached, and the operation closed in 1959 (Hughes, 1960). Altogether some 28 000 tonnes of clay were mined, and all was used by APPM as a paper filler.

The reserves of this deposit have been exhausted.

MAWBANNA

A weathered Precambrian clayey siltstone was mined near Mawbanna between 1940 and 1956 for use as a paper filler. The total production from the pit was 9451 m³. Use of the material ceased due to replacement with more pure clay from the northeast, the presence of very fine-grained silica

in the Mawbanna clay being deleterious to the paper making machinery (Threader, 1976).

SOUTH MT CAMERON

Clay was mined in conjunction with tin at the Endurance mine at South Mt Cameron from 1945 to 1962, and was used exclusively by the paper industry as a "filler" clay.

The clay at South Mt Cameron forms "drifts" in granite-derived Tertiary sediments of sand and gravel, certain horizons of which are tin bearing. The clay was mined in conjunction with the tin. Extensive laboratory tests were made in 1962 by the Department of Mines, and from these experiments a pilot plant was designed to separate the clay from the associated quartz grit (Manson *et al.*, 1962). This process was quite successful, and clay derived from this source was used satisfactorily for some time. Around 53 000 t of clay was produced. The operation ceased because the reserves at this location were largely exhausted.

There would still be some remaining reserves of kaolinite clays associated with both alluvial and eluvial (weathered granite) tin workings in the northeastern part of the State. No quantifiable estimates of such reserves can be made on the available information.

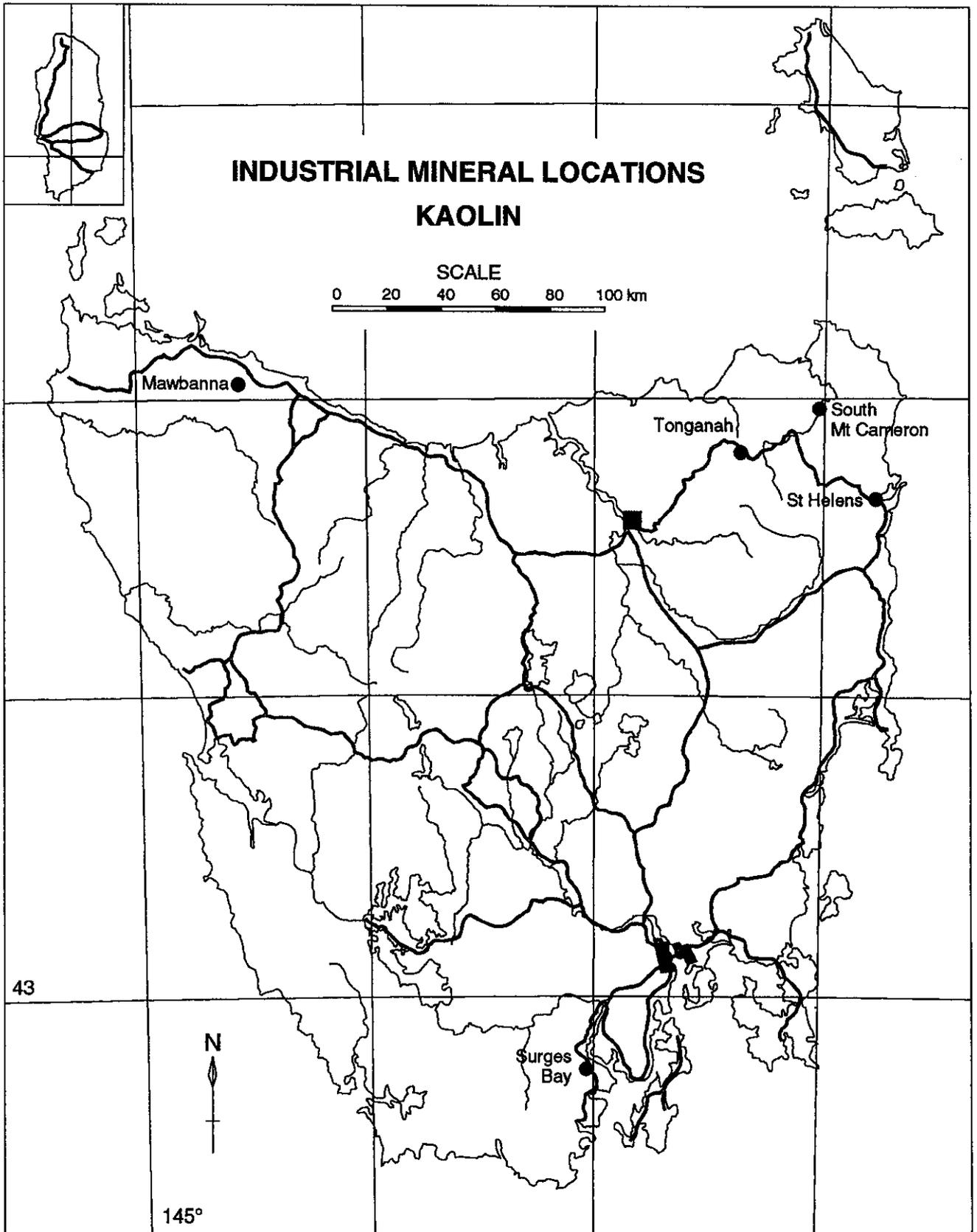
ST HELENS

From 1950 to 1954 clay was mined by a Mr M. Kirwan and four employees from a deposit near St Helens. The exact location of this deposit is not known. Altogether some 15 200 t of kaolin was produced. Presumably mining ceased due to exhaustion of the deposit.

TONGANAH

Kaolin is mined by the Ballarat Clay Company at Tonganah, to the east of Scottsdale in the State's northeast. The clay is used as a paper filler at the APPM plants at Burnie and Wesley Vale. The area of the mine and treatment plant is held under ML 38M/76.

The kaolin is derived from decayed feldspars in weathered *in situ* granite. The crumbling granite is scooped up by hydraulic excavator after the overburden of soil and vegetation has been removed. From the weathered granite, the kaolin fraction is removed at the nearby treatment plant by cycloning and screening. The reject material is returned to the mined-out pits, which are recontoured when filled, and sown with pasture.



Production for the 1988/89 financial year was 30 000 tonnes of kaolin product. This mine is at present the only one producing kaolin in the State. The clay is suitable only for "filler" clay, and imported clay is still used as a "coating" clay for the paper produced. To date around 300 000 t of filler clay has been produced.

ADAMSFIELD

Thick lenses of white clay occur interbedded with alluvial gravels in the valley of the Adam River at Adamsfield. The material is partly derived from the ultramafic rocks in the surrounding higher country. Osmiridium was extracted from the alluvial wash earlier this century.

No detailed investigation has been made of the clay. A spot sample was analysed as:

Illite	40%
Quartz	35%
Halloysite*	25%

* a clay mineral having the same chemical composition as kaolinite, but a different crystal structure and consequently different physical properties. Apparently halloysite can be converted to kaolinite by heating.

The clay is a clean white colour and is worthy of further studies to determine if the clay can produce a product suitable for paper manufacture.

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