Chapter 8
Economic Geology

The mining and quarrying history of Chek Lap Kok is dominated by the extraction of dressed stone for construction and by the mining of quartz and kaolin. There are no known economic or potentially economic resources of metalliferous minerals on the island.

Construction Materials

Davis (1952) gave an account of the use of granite from around the Territory in building construction. However, he gave no specific examples, probably because all the records were destroyed in the Second World War. Around the coast of Lantau and adjacent islands, there is ample evidence of stone quarrying. On Chek Lap Kok, this seems to be confined to the northern part of the island.

Fredenburg (1990) noted that by the early 19th century, if not before, granite for construction in Guangzhou was being quarried in the north of the island. He remarked that a Tin Hau temple built near Miu Wan (1212 2005) in 1823 is entirely constructed of this granite. Nearby, there is a small stone quarry (122 201) that is reputed to have been in operation after the Second World War (Fredenburg, 1990), and which ceased production in 1966. Other, older stone quarries can be seen along the northern tip of the island. The quarries face west, and fresh excavated rock can be seen below a weathered profile about 5 to 10 m thick. Most of the coastal rock exposures around Sham Wan show signs of having been cut for stone, and the beaches are strewn with rock fragments from stone dressing operations (Plate 26).

Historically, sand has been taken from beach deposits around the Territory for use in the construction industry. There is ample evidence that this commercial extraction was taking place in north Lantau as recently as the 1960s. On Chek Lap Kok there is strong evidence, from comparisons of the present coastline

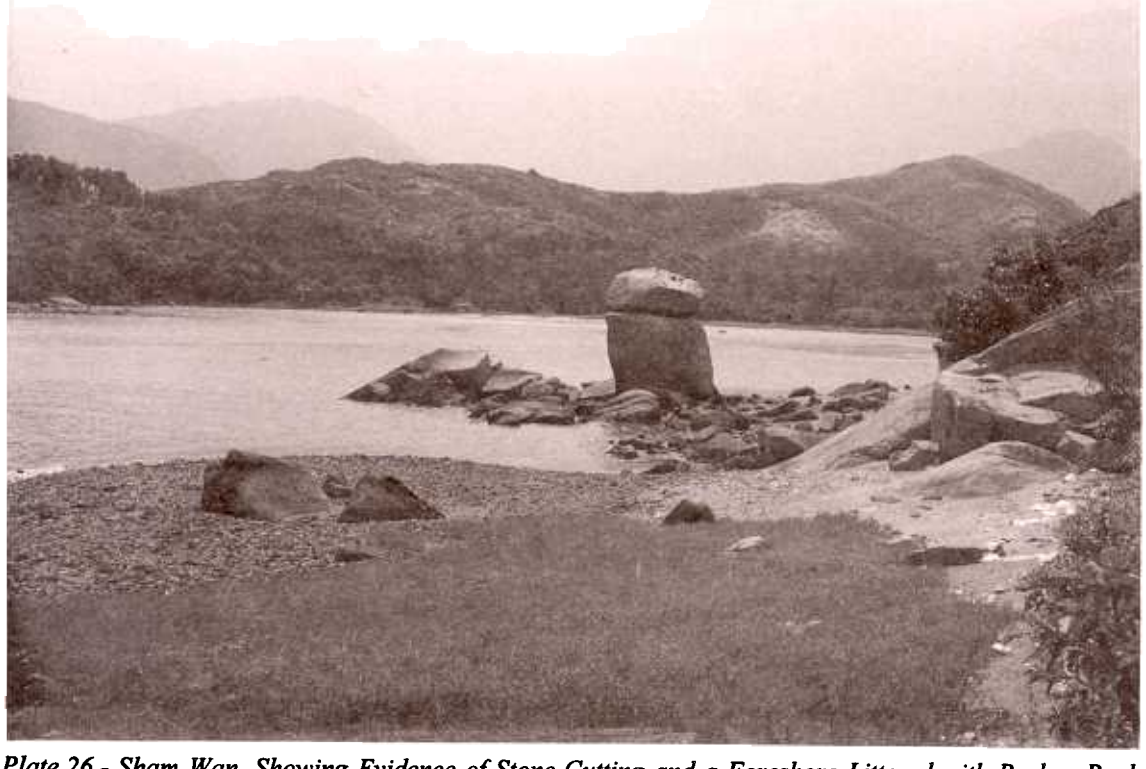

Plate 26 - Sham Wan, Showing Evidence of Stone Cutting and a Foreshore Littered with Broken Rock Debris from Stone Dressing Operations (1156 2000)

with that mapped in 1905, that a large sand digging operation was sited at Fu Tei Wan. The exact details are unknown, and it is also likely that other beaches were exploited commercially.

Non-metalliferous Minerals

The extraction of kaolin and quartz took place at a number of locations in the north of the island. Although some of the mining files have been lost, and all mining information from the pre-war years has gone, recent information gives a good indication of the extent of mining.

There are three areas for which some records exist, and where there is ample field evidence of mineral extraction. These are east of the test embankment, near Cheung Sha Lan and east of Sham Wan. Production figures are available for two of these areas and are given as Table 3.

The licenced kaolin mine east of the test embankment was in continuous operation from 1981 to 1988. During most of that period, it did not extract kaolin commercially, but applied on a six-monthly basis for permission to sell the silica sand (quartz) by-product. The mine operated using high power water jets supplemented by mechanical diggers to sluice the sand and clay from the working face. The company working the site was Lantao Island Mining Co. Ltd, and their licence expired in early 1988, at which time the site was abandoned. The site buildings and plant have mostly been removed, leaving only the old unstable jetty. No restitution of the site has been undertaken, as can be seen clearly in Plates 27 and 28. Plate 27 shows the kaolin mine east of the test embankment as seen from the eastern end of the workings. The borrow area for the embankment can be seen on the northern side. The extent of part of the workings can be judged in Plate 28, a view from the borrow area looking southeast.

The licenced mining area to the east and south of Cheung Sha Lan was for the extraction of quartz, probably from veins cutting the weathered granite. The application was granted in 1959 and expired in 1963. In the field, there is some good evidence of the former workings, for example a southsoutheast-trending excavation along a quartz vein situated 200 m south of Cheung Sha Lan (1108 1954).

Table 3 - Available Mine Production Statistics for the Island

Kaolin Mine East of Test Embankment		
Year	**Silica Sand (tonnes)**	**Kaolin (tonnes)**
1981	8 053	
1982	6 018	
1983	1 547	
1984	51 340	
1985	36 934	9 602
1986	17 272	850
1987	56 383	
1988	12 821	

Kaolin Mine East of Sham Wan	
Year	**Silica Sand (tonnes)**
1968	111
1969	704
1970	442
1971	132

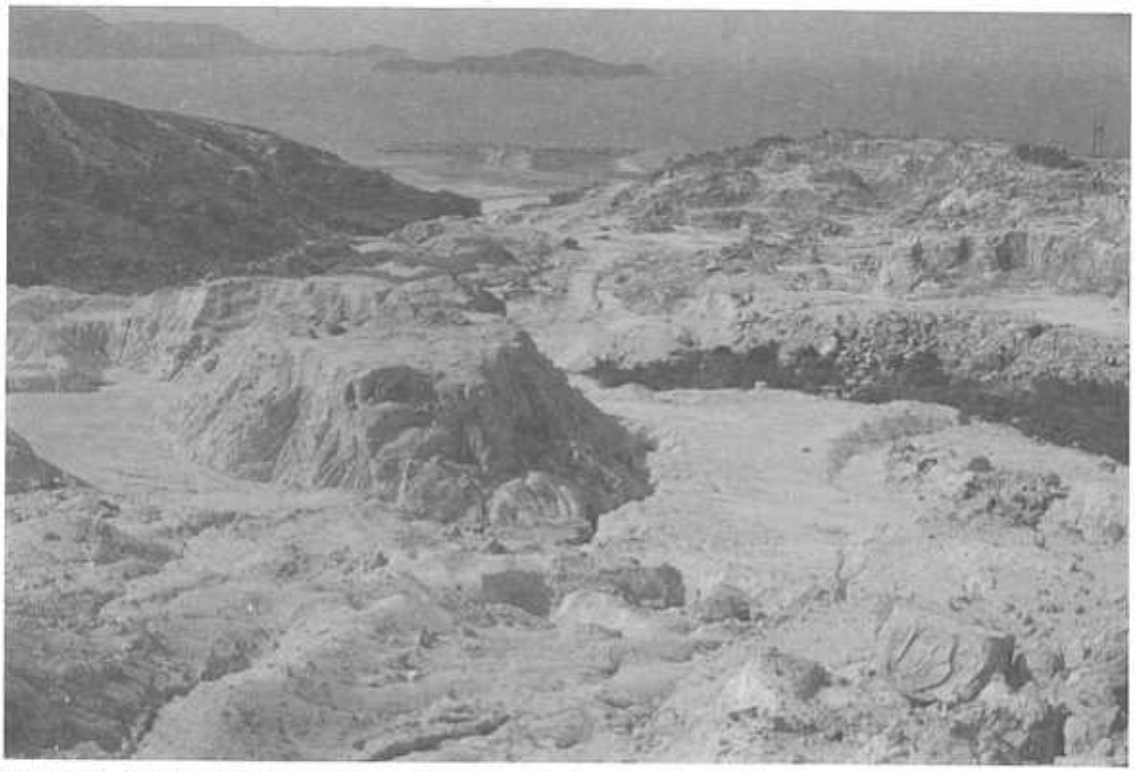

Plate 27 - Kaolin and Quartz Mine, with the Test Embankment in the Background (110 190)

Plate 28 - Kaolin and Quartz Mine Looking Southeast from the Borrow Area for the Test Embankment (110 190)

Plate 29 - Remains of Tang Dynasty (1 000 Year Old) Lime Kilns Excavated at Sham Wan (1148 1954)

Plate 30 - Tang Dynasty Lime Kiln at Fu Tei Wan Exposed by Wave Action (1107 1790)

Plate 31 Yuan Dynasty (800 Year Old) Kilns Believed to Be for Iron Smelting, Excavated from the Hillside at Ha Law Wan (1125 1747)

To the east of Sham Wan, extraction of kaolin and quartz was undertaken by Tien Po Quarry Co. in the late 60s and early 70s. By 1973 the mine was abandoned, and the licence expired in that year. They identified an area of kaolinization and quartz veining in the granite, with kaolin preferentially concentrated along the veins. Plate 20 shows excavations along one of the large easterly trending vein.

Archaeological excavations at Sham Wan (115 196) (Plate 29) and Kwo Lo Wan (114 175) provided evidence of a lime producing industry active in the Tang Dynasty (c. 1 000 years ago). A kiln exposed on the beach at Fu Tei Wan (1107 1790) (Plate 30) was also used for lime production, probably using shells and coral collected from the beach deposits or intertidal regime.

Metalliferous Minerals

The only known occurrences of metalliferous minerals are the small amounts of iron oxide found associated with many of the quartz veins. However, an industrial operation probably involving iron smelting and dating back to the Yuan Dynasty (c. 800 years old) was discovered by the Hong Kong Archaeological Society at Ha Law Wan (1125 1747) in 1991 (Plate 31). Although there is no positive evidence of the process, small quantities of smelted iron-rich material from the kilns were found at the site.