

HONG KONG GEOLOGICAL SURVEY SHEET REPORT NO. 3

Geology of Tsing Yi



Geotechnical Engineering Office
Civil Engineering Department
HONG KONG

Geology of Tsing Yi

1:5 000 Sheets 6-SE-D & 10-NE-B/D

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Geotechnical Engineering Office
Civil Engineering Department
HONG KONG April 1995

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Published April 1995

ISSN 1022-6168

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101 Princess Margaret Road
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Hong Kong

Cover: Oblique aerial view of Tsing Yi
taken from the south in May 1983.

This publication is available from:

Chief Geotechnical Engineer/Special Projects
Geotechnical Engineering Office
12/F Civil Engineering Building
101 Princess Margaret Road
Homantin, Kowloon
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Foreword

This report and associated 1:5 000-scale maps specifically relate to the development areas on Tsing Yi which concern new road and rail links associated with the construction of the new airport at Chek Lap Kok and the new port at North Lantau.

The report forms part of the published results of a programme of systematic geological mapping of Hong Kong that began in 1982. This work has greatly enhanced our understanding of the stratigraphy, structure, and geological history of Hong Kong's rocks. At the same time, it has allowed a geological database necessary for the continuing economic development of the Territory to be established and developed.

The mapping programme is being undertaken by the Hong Kong Geological Survey, which is a section of the Planning Division of the Geotechnical Engineering Office. The section was led by Dr I. R. Basham and the Division was under the direction of Dr R. P. Martin during the mapping project reported here.

The 1:5 000-scale onshore geological survey of Tsing Yi was conducted by Dr R. J. Sewell, and the offshore geological data were compiled and interpreted by Mr J. A. Fyfe. Much helpful advice and review comments were given by Dr R. L. Langford.

The Survey benefitted from the co-operation of many organizations and individuals. In particular, the co-operation of Binnie & Partners (Hong Kong), China Light & Power Co. Ltd, Electronic and Geophysical Services Ltd, Fugro (Hong Kong) Ltd, Maunsell Geotechnical Services Ltd, Mobil Oil Hong Kong Ltd, Mott Macdonald (Hong Kong) Ltd, Ove Arup & Partners and Scott Wilson Kirkpatrick & Partners and is gratefully acknowledged.

This report and the accompanying map sheets will be of interest and value to earth scientists, engineers, planners, developers, teachers and students.

A. W. Malone

Principal Government Geotechnical Engineer
April 1995

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Map and Report Series Notes

- This report describes the geology of Tsing Yi and should be read in conjunction with the 1:5 000 Geological Maps 6-SE-D and 10-NE-B/D. The 1:20 000 Geological Map Sheets 6 (Yuen Long) and 10 (Silver Mine Bay), and Memoirs 3 and 6, Geology of the Western New Territories and Lantau, also include relevant information on the geology of the Tsing Yi area.
- This report forms one of a series that records the findings of the Hong Kong Geological Survey. An index of the 1:5 000 Geological Maps to which this report relates is shown below. The report specifically relates to the area covered by Route 3 and the Tsing Yi side of the Lantau Fixed Crossing.



- Onshore superficial deposits are not generally considered mappable if less than 2 m thick. This minimum thickness is also used as a mapping criterion for offshore sediments.
- Grid references are based on the Hong Kong 1980 Metric Grid as shown on the 1:5 000 Geological Maps. Eight-figure references indicate positions to the nearest 10 m, with Eastings followed by Northings, eg 2672 2739. Six-figure references indicate positions to the nearest 100 m.
- All onshore and offshore levels and depths are reduced to Hong Kong Principal Datum (PD), which is 1.2 m below Mean Sea Level and 0.15 m above Admiralty Chart Datum.
- Samples in the Territory-wide rock collection archived by the Hong Kong Geological Survey are prefixed HK followed by the serial number, eg HK 2263.
- Boreholes are generally referred to by the drilling contractor's number followed by the Geotechnical Information Unit (GIU) accession number for the relevant ground investigation report, eg 1201D/03412. The GIU is located in the Civil Engineering Library of the Civil Engineering Department and is maintained by the Geotechnical Engineering Office.
- Copies of seismic profiles used in this project are held by the Hong Kong Geological Survey. Seismic projects are numbered sequentially by year and include several lines which carry a one- or two-letter prefix and are numbered sequentially. For example, line TS11 of project 89/6 refers to line no. 11 of the Tsing Yi/Stonecutters survey, being the 6th 1989 project for which data has been acquired by the Hong Kong Geological Survey.
- The system used in this report for grain-size description and classification is summarized in Table 1.

Table 1 - Grain-size Description and Classification of Rocks and Superficial Deposits in Hong Kong

Superficial Deposits	Grain Size mm	Solid Rocks												
		Sedimentary Rocks		Pyroclastic Rocks	Igneous Rocks							Metamorphic Rocks		
					Acid		Acid-Intermediate		Intermediate	Basic	Other	Foliated	Other	
Boulders	200	Sedimentary Breccia, Conglomerate	Pyroclastic Breccia, Agglomerate	Very Coarse	Pegmatite	Granite	Granodiorite	Quartz Syenite	Syenite	Quartz Monzonite	Gabbro	Lamprophyre	Schist	Quartzite, Marble, Hornfels, Fault gouge, Fault breccia
Cobbles	60													
Gravel	20		Medium											
	6													
Sand	2	Sandstone	Coarse Ash Tuff	Fine	Aplite, Microgranite granodiorite	Rhyolite	Dacite	Quartz Trachyte	Trachyte	Quartz Latite	Andesite	Basalt	Mylonite, Phyllite	
	0.6													
	0.2													
Mud	0.06	Siltstone	Mudstone	Fine Ash Tuff	Very Fine, Aphanitic	Rhyodacite	Quartz Trachyte	Trachyte	Quartz Latite	Andesite	Basalt	Mylonite, Phyllite		
	0.002	Claystone												