# Geology of Tsing Yi



Geotechnical Engineering Office
Civil Engineering Department
HONG KONG

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1:5 000 Sheets 6–SE–D & 10–NE–B/D R.J. Sewell & J.A. Fyfe

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

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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 off-shore 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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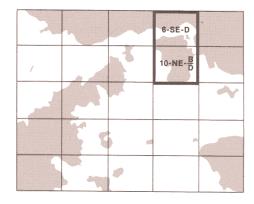
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## Map and Report Series Notes

- 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.

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- 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

				Solid Rocks												
Superficial Deposits	Grain Size	Sedimentary Rocks	nentary [	Pyroclastic		Igneous Rocks									Metamorphic Rocks	
Deposits			mm	Rocks		Acid		Aci	d-Interme	diate	Intermediate	Basic	Other	Foliated	Other	
Boulders			200	nentary	Pyroclastic Breccia, Agglomerate	Very	Pegmatite									Quartzite,
	Coarse	20	Breccia, Conglomerate			Coarse	-									
Gravel	Medium			Lar	Lapilli-Tuff	Coarse	- AD-11	Granodiorite	Quartz Syenite	Syenite	Quartz Monzonite				Schist	Marble, Hornfels,
	Fine					Medium							Gabbro			
	Coarse	1000	0.6 0.2 Sandstone Coarse Ash Tuff									Lamprophyre		Fault gouge, Fault		
Sand	Medium	1		Fine							i i					
	Fine	2-5-10		Asii ruii			Micro-					Microgabbro	,		breccia	
Mud	Silt		Siltstone	Mudstone	Fine	Very Fine,	Rhyolite	granodiorite Dacite	Quartz	Trachyte	Quartz	Andesite	Basalt		Mylonite,	
	Clay 0.002	0.002 Clay	Claystone		Ash Tuff	Aphanitic	Rhyo	dacite	Trachyte	(50)	Latite				Phyllite	