HONG KONG GEOLOGICAL SURVEY *SHEET REPORT NO. 4*

Geology of North Lantau Island and Ma Wan

Geotechnical Engineering Office
Civil Engineering Department
HONG KONG

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Geology of North Lantau Island and Ma Wan

1: 5 000 Sheets 10-NE-A, 10-NE-C, 10-NW-B, 10-NW-C, 10-NW-D & 10-SW-A

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Cover: Oblique aerial view of north Lantau Island
taken from the north in December 1989.

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Foreword

This report and associated 1:5 000-scale maps specifically relate to the development areas on north Lantau Island and Ma Wan on which new road and rail links associated with the construction of the new airport at Chek Lap Kok and new port facilities at north Lantau Island are being developed. The report covers part of the site of the proposed Port Peninsula Development, the North Lantau Expressway and Lantau Fixed Crossing in the most northeasterly part of north Lantau Island.

The report forms part of the published results of a programme of systematic geological mapping of Hong Kong that began in 1982 and complements geological information contained in Hong Kong Geological Survey Memoir No.6 - Geology of the Lantau District. 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 Dr C. J. N. Fletcher 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 north Lantau Island and Ma Wan was conducted by Dr R. J. Sewell, and the offshore geological data were compiled and interpreted by Mr J. W. C. James. Much helpful advice and review comments were given by Dr S. D. G. Campbell, Mr P. A. Kirk, and Mr J. A. Fyfe.

The Survey benefitted from the co-operation of many organizations and individuals. In particular, the co-operation of Mott Macdonald (Hong Kong) Ltd, Scott Wilson Kirkpatrick & Partners, the Provisional Airport Authority, and Electronic and Geophysical Services Ltd 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
November 1995

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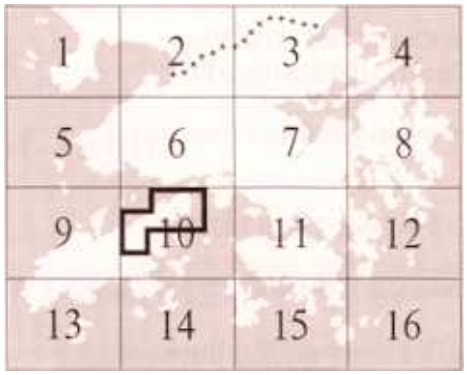
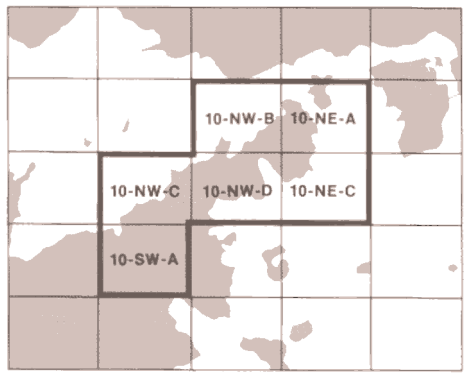
Map and Report Series Notes

- This report describes the geology of north Lantau Island and Ma Wan and should be read in conjunction with the 1:5 000 Geological Maps 10-NE-A, 10-NE-C, 10-NW-B, 10-NW-C, 10-NW-D, and 10-SW-A. The 1:20 000 Geological Map Sheet 10 (Silver Mine Bay) and Memoir 6, Geology of the Lantau Distrct, also include relevant information on the geology of the 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 the North Lantau Expressway, the Lantau Fixed Crossing, and part of the Port Peninsula Development.



1:20 000 Maps



1:5 000 Maps

- 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. Ten-figure references indicate positions to the nearest 10 m, with Eastings followed by Northings, eg 2200 2230. Eight-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 9872.

- 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 5SW32/13464. 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 NL5 of project 91/1 refers to line no. 5 of the North Lantau survey, being the 1st 1991 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

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		Quartz Syenite	Syenite	Quartz Monzonite		Gabbro	Lamprophyre	Schist	Quartzite, Marble, Hornfels, Fault gouge, Fault breccia
Cobbles		60														
Gravel	Coarse	20			Lapilli-Tuff	Coarse										
	Medium	6				Medium	Granite	Granodiorite								
	Fine	2														
Sand	Coarse	0.6	Sandstone		Coarse Ash Tuff	Fine	Aplite, Microgranite	Micro-granodiorite					Microgabbro			
	Medium	0.2														
	Fine	0.06														
Mud	Silt		Siltstone	Mudstone	Fine Ash Tuff	Very Fine, Aphanitic	Rhyolite	Dacite	Quartz Trachyte	Trachyte	Quartz Latite	Andesite	Basalt		Mylonite, Phyllite	
	Clay	0.002	Claystone				Rhyodacite									