

GEOLOGICAL EXPLANATORY NOTES

The solid geology of the district is dominated by Upper Palaeozoic sedimentary rocks and Mesozoic volcanic and intrusive igneous rocks. Pre- and post-volcanic Mesozoic sedimentary rocks are also present in the district.

Palaeozoic Lower Carboniferous San Tin Group is divided into the Yuen Long and Lok Ma Chau formations. The Yuen Long Formation comprises pure marble (the Ma Tin Member), and impure and dolomitic marble, with subordinate chert and metaslates interbeds (the Lung Ping Member). The marbles occur at Tai Shan Hill and Pak Ho Chau as a substrate beneath a cover of superficial deposits of at least 20 m thick. The Lok Ma Chau Formation, mainly exposed on the lee hills at Lok Ma Chau and Ma Tso Lung, is divided into two units: the lower Ma Po Member and the upper Tai Shek Ma Member. The Ma Po Member comprises metamorphosed siltstone and phyllite with minor metaslates and graphitic schists, whereas the Tai Shek Ma Member consists of metaslates with subordinate metagranite and phyllite.

A sequence of metamorphosed siltstone, sandstone and carbonaceous mudstone near Fung Keng Shan, which was previously considered to belong to the Ma Po Member, has now been reassigned to the Tai O Formation. This sequence is now recognized as pre-volcanic sediments underlying the Mesozoic volcanic rocks.

Mesozoic volcanic successions include the Tuen Mun Formation and the Tuen Wan Volcanic Group, both are of Middle Jurassic age. Volcaniclastic sandstone, siltstone and conglomerate with occasional laterally mobile clasts belonging to the Tin Shui Wu and Siu Hong Tuen members of the Tuen Mun Formation are found underneath the Tin Shui Wu. Ams sandstone and conglomerate layers crop out at Hong Tsang Wai, which were previously mapped as part of the Carboniferous Lok Ma Chau Formation, have now been re-assigned to the Siu Hong Tuen Member. The Shing Mun and Tai Ma Shan formations belonging to the Middle Jurassic Tuen Wan Volcanic Group occur from Kai Kung Leung to Ki Lung Shan (Hidden Hill). Both formations consist mainly of fine-grained coarse ash tuff with subordinate tuffaceous sandstone, although the lithology of the Shing Mun Formation is more variable.

The post-volcanic Oligocene Koi O Formation is exposed along the coastline to the west of Lau Fau Shan and found in offshore benches in Deep Bay. It comprises thickly bedded, reddish purple, granitic disintegrating breccia, conglomerate and coarse sandstone.

Quartzites of Late Jurassic to Early Cretaceous age intrude or are in fault contact with the Carboniferous to Middle Jurassic strata. The Tsing Shan Granite is dominantly fine- to medium-grained, locally sheared and encased by quartz veins, and occurs as a narrow zone extending from San Hong Tuen to Tuen Bei Tai. A porphyritic coarse-grained granite, which remains to be undifferentiated, is identified in benches at Lok Ma Chau Loop and in Deep Bay. Prograde fine- to medium-grained granodiorite, which is tentatively assigned to the Middle Jurassic Tai Po Granodiorite, has limited occurrences near Ng Uk Tuen and Hong Kong Wetland Park. Undifferentiated basic dykes cut the sedimentary, volcanic and granitic rocks at various locations. Quartz veins are common in all rock types, the largest being closely associated with the Deep Bay Fault.

The structure of the district is dominated by the northeast-trending Lo Wu-Tuen Mun Fold Belt (Fault Zone), which comprises a series of folds and ductile shear zones associated with the major northeast-trending faults, including Deep Bay Fault, Yuen Tai Shan Fault, East Tuen Mun Fault, Ma Po Fault and San Tin Fault. Apart from ductile shearing, the rocks within the fault zone have been subjected to dynamic and hydrothermal metamorphism, and brecciation and fracturation are also evident in some of these faults. The rocks of the San Tin Group and parts of the Tuen Wan Volcanic Group are also regionally metamorphosed to phyllite, siltite and pelitic schist, metaslates and metagrit.

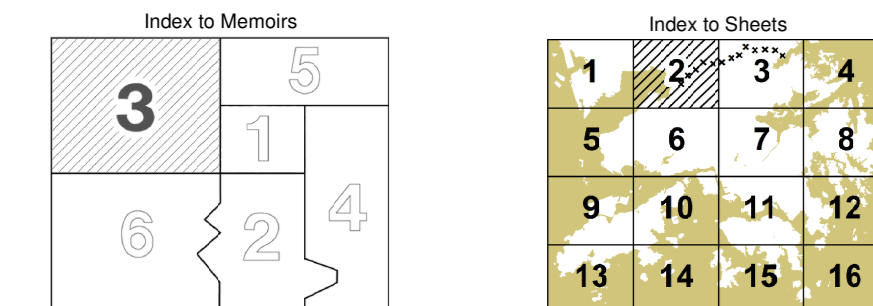
A weathered mantle covers most of the district. The effect of weathering upon the different rock types is broadly indicated in the lithographic relief: in general, the finer-grained tuffs tend to form higher and sharper peaks, whereas granites and sedimentary rocks form lower and more rounded hills.

Quaternary intertidal deposits from the Tin Shui Wu, Ma Po and San Tin plains, Beach and backshore sand deposits fringe the coastline from Lau Fau Shan to Tuen Bei Tai, as well as the plain shoreline at Tai Koi Chau. These sediments, together with the marine mud covering the seabed of Deep Bay, belong to the Holocene Hang Hau Formation. Alluvium and colluvium of both Pleistocene and Holocene age are present in the district. Alluvial deposits are present along the lower stream courses and are widespread on the ground at Long Valley, Tai Keng and Ngai Tam Ma in the hilly areas; colluvium is common in the upland valleys and the foothills. The Holocene alluvial deposits accumulated along recent stream courses, are assigned to the Funging Formation whereas the older alluvium and colluvium, belonging to the Pleistocene Chak Lap Koi Formation are present in onshore area as well as covered by marine sediments of the Holocene Hang Hau Formation.

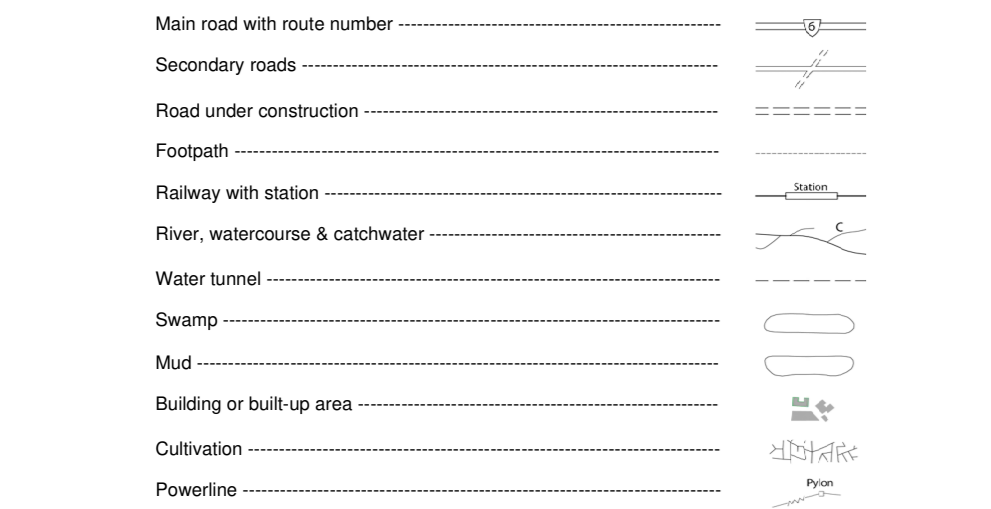
GEOLOGICAL MEMOIRS

Earlier descriptions of the geology for the areas covered by the maps in this series are published as memoirs of the Hong Kong Geological Survey. The first edition of Map Sheet 2 (1989 and 1991) was described in Memoir No. 3, "Geology of Western New Territories" (1989). The geology of the district is summarized in two memoirs, The Pre-Quaternary Geology of Hong Kong (2000) and The Quaternary Geology of Hong Kong (2000) that are accompanied by a series of 1:100,000-scale geological maps. An online version of these two memoirs is available at http://www.geod.gov.hk/eng/about-us/organisation/eng_geo_services/pub_info_memoirs/geology/index.htm.

The latest revisions to Map Sheet 2 are described in Geological Report GR 2009, "Updates of Hong Kong Geological Survey 1:250,000-scale Maps - Major Findings and Revisions Map Sheet 2 - San Tin". The published maps and memoirs are available from the online Government Book store (<http://www.bookstore.gov.hk>), and the Geological Report is available on request from the Chief Geotechnical Engineer / Planning, GEO, CEDD.

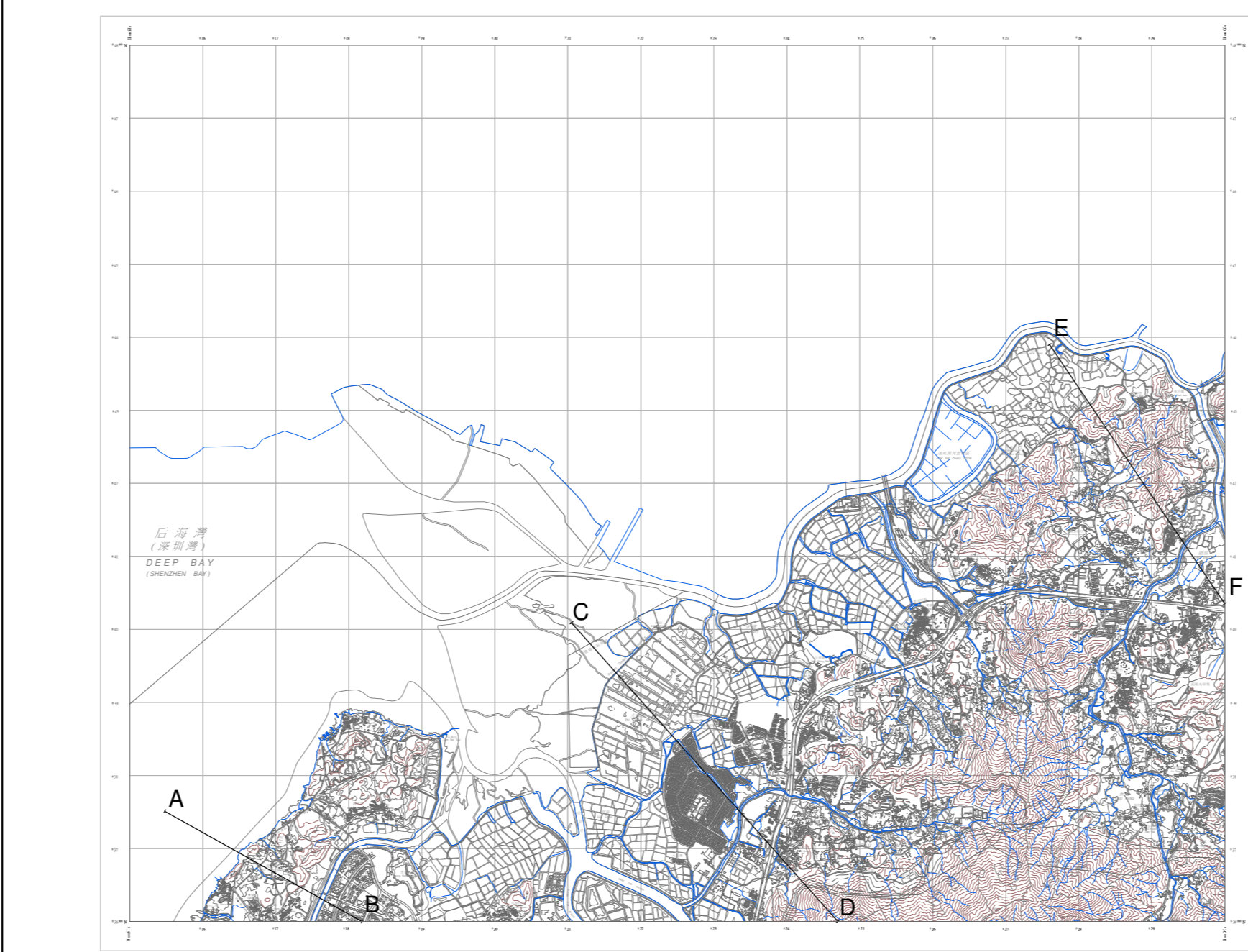


BASE MAP REFERENCE



The base map is a monochrome version of Sheet 6, Topographic Series HM20C, published by Lands Department. Heights are in metres above Principal Datum, which is 1.2m below Mean Sea Level. The contour interval is 20m. Submarine contours, shown by 5m, 10m, 15m, 20m, 30m and 50m, are derived from the Hong Kong Electronic Navigation Charts prepared by the Hydrographic Office of the Hong Kong SAR Government. The Hong Kong 1980 Grid on this geological edition is shown at 1000 metre spacing. For further information on the topographical and cultural elements, consult the Topographic Series HM20C.

LINES OF CROSS-SECTION



GEOLOGICAL CROSS-SECTIONS

