Chapter 2
Outline of Geology

The solid rocks and superficial deposits of the island are summarized in Figure 4 and Table 2. The island is dominated by bedrock of fine-grained and fine- to medium-grained granite of Jurassic to Cretaceous age. Along the east of the island, and in part of the extreme north, the rock is megacrystic; it has a fine-grained groundmass with scattered large crystals.

The granite is cut by dykes of quartzphyric rhyolite, commonly over 20 m wide, and possibly up to 100 m, and dykes of feldsparphyric rhyolite. These dykes are found only in the southern parts of the island, and are a dominant feature of the southernmost peninsula. The large rhyolite dykes typically trend eastnorth-east. Thin aplite dykes are scattered through the granite, although these are not very common. Even less common are small patches or veins of pegmatite.

Quartz veins are very common, particularly in the north. They are mostly less than 0.3 m wide, and trend eastnortheast to northeast. An area of kaolinization east of the test embankment has abundant quartz veins in places. There are also dykes of basalt and lamprophyre up to 3 m thick. These may be either of Tertiary age or close in age to the granites they intrude. These dykes cut nearly all earlier structures, and trend north or eastnortheast. They are found mostly in the south of the island.

The structure is dominated by a northnortheast-trending fault cutting the centre of the island. This fault extends from Fu Tei Wan to Sham Wan, and is the main structural element influencing the morphology of the island. Numerous eastnortheast-trending photolineaments are the surface expression of a dominant master joint set in the granite. This orientation coincides with the emplacement of the younger rhyolite dykes.

Kaolinization of the granite is restricted to an area north of Fu Tau Shan, east of the test embankment, and to an area east of Sham Wan. A shallow mantle of weathered rock covers most of the island; exposures of solid bedrock form most of the coast and can be seen on many hill slopes. More commonly exposed are corestones of bedrock within the weathered mantle. The quartz veins often form upstanding ribs, particularly in the deeply weathered and excavated areas of kaolinization.

Superficial deposits are mostly restricted to the larger valleys at Fu Tei Wan and at Sham Wan. Here, Holocene deposits occur behind beach sand, formed by the eluviation of slope deposits of probable Pleistocene age. Other small slope deposits can be seen in narrow valleys throughout the island. The coastline is mostly rocky to low water mark and beyond, but does have sheltered bays with accumulations of beach sand and back beach sand bars.

Freestone quarrying of the granite for construction was commonplace along most of the northern coast from some time in the nineteenth century until the middle of this century. Workings for kaolin and sand were active until recently in a small area east of the test embankment, north of Fu Tau Shan. Older workings can be found east of Sham Wan. There is also evidence of small-scale workings in thin quartz veins, presumably for ornamental uses. Kilns for lime production have been found at Sham Wan, Fu Tei Wan and Ha Law Wan. Smelting of iron possibly took place near Ha Law Wan.

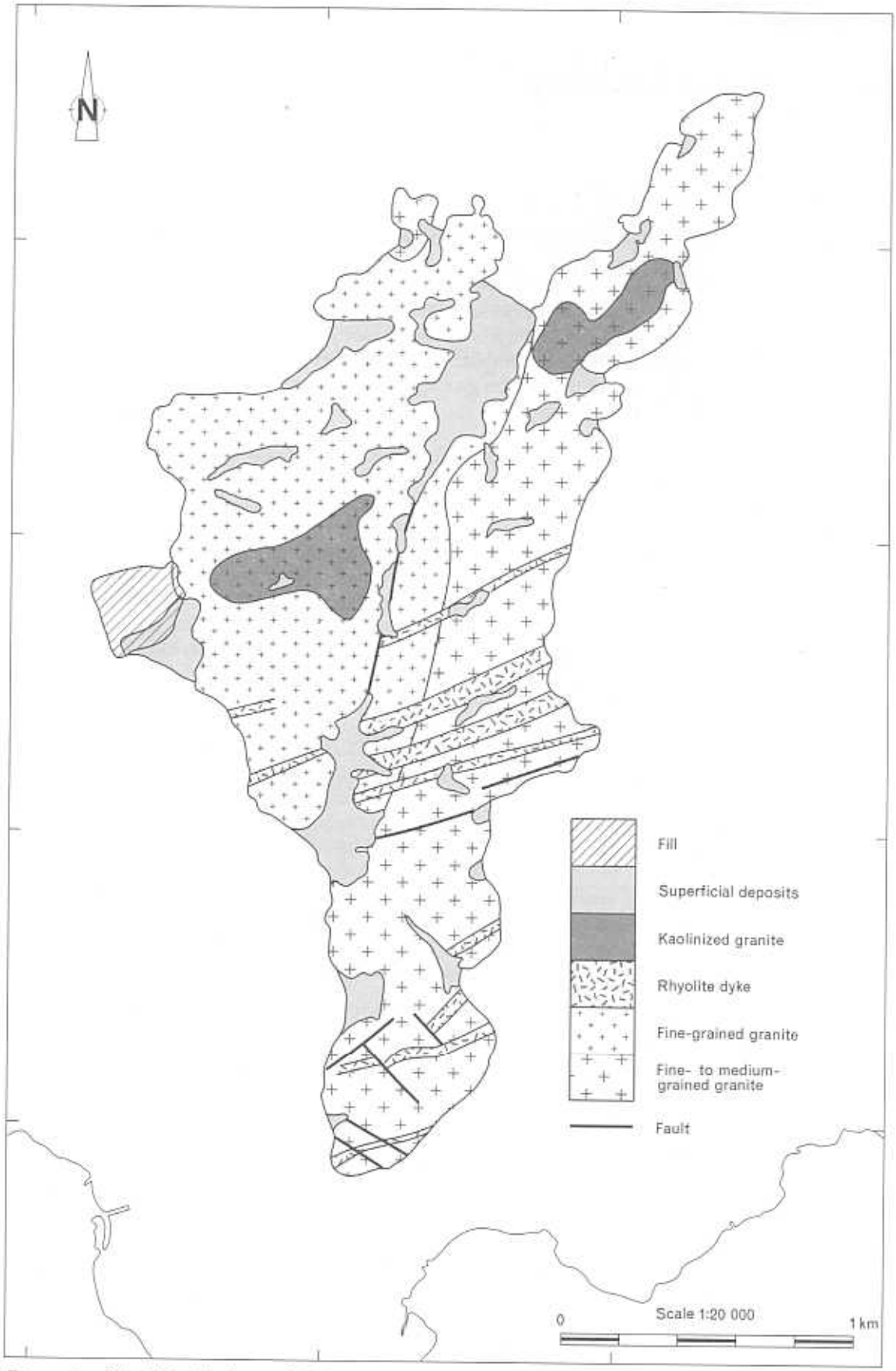

Figure 4 - Simplified Geology of Chek Lap Kok