

Appendix 1

Abbreviated Borehole Logs

| BGS No. | Grid Reference | | G.L. (mpd) | Depth to Base of Fill | Depth to Superficial Deposits (mpd) | Total Depth | Formations Proved | Comments |
|---------|----------------|-------|------------|-----------------------|-------------------------------------|-------------|-------------------------|---------------------------------------------------------------------------------------------------------|
| | East | North | | | | | | |
| 1 | 21611 | 33292 | 3.70 | 0.60 | 58.70 | 110 | CYL(Cmt), JTM | Deeply weathered strata close to eastern volcanics/ Carboniferous thrust. |
| 2 | 21004 | 32933 | 7.80 | 3.30 | 24.50 | 150 | CYL(Clp) | A type section of Long Ping Member marble showing dark grey colouration and complex internal structure. |
| 3 | 20744 | 33279 | 5.60 | 2.10 | 25.68 | 150 | CYL(Cmt) | A type section of Ma Tin Member, marble. Cavities unusually rare. |
| 4 | 20187 | 23217 | 5.30 | 1.70 | 10.70 | 144 | Cmp, Cmp(gr), CYL(Clp) | Graphite schist overlying dark marble with cavities. |
| 5 | 20509 | 35333 | 4.80 | 2.50 | 14.20 | 197 | Cmp, CYL(Cmt), CYL(Clp) | Good passage from pale (Cmt) marble to dark (Clp) marble. |
| 6 | 21067 | 35248 | 5.10 | 3.80 | 8.80 | 48 | gd | Granodiorite showing weathering along joints at depth. |
| 7 | 20984 | 35891 | 4.54 | 3.30 | 17.80 | 153 | Cmp(gr) | Metasiltstone and metasandstone. |
| 8 | 20848 | 36202 | 4.23 | 4.50 | 17.50 | 172 | Jtw | Deeply weathered, green tuffaceous metasiltstones with marble clasts (Cmt). |
| 9 | 21314 | 35078 | 3.44 | 1.50 | 35.55 | 102 | CYL(Cmt), gd | Veined and altered marble overlying granodiorite. |
| 10 | 21337 | 34655 | 4.89 | 4.20 | 17.70 | 55 | gd | Granodiorite. |
| 11 | 20675 | 37545 | 3.77 | 2.00 | 18.20 | 182 | Cmp | Metasiltstone, metasandstone and quartzite. |
| 12 | 19746 | 37327 | 2.94 | 4.20 | 21.90 | 156 | Cmp, CYL(Clp) | Metasiltstone faulted against yellowish, stained and fractured marble. |
| 13 | 18545 | 36244 | 2.72 | - | 14.60 | 99 | Jtw/Cmp | Interbedded metasiltstone with metatuff. |
| 14 | 19113 | 37137 | 3.07 | 2.00 | 16.20 | 170 | Jtw/Cmp, gd | Interbedded metatuff and metasiltstone. |
| 15 | 19164 | 37706 | 2.88 | 4.70 | 8.70 | 160 | Jtw/Cmp | Interbedded metatuff and metasiltstone and metaconglomerate. |
| 16 | 21057 | 35531 | 4.90 | 4.50 | 13.80 | 47 | gd | Granodiorite. |
| 16I | 21056 | 35531 | 4.84 | 8.50 | 23.97 | 47 | gd | Inclined borehole. |
| 17 | 20530 | 35578 | 4.72 | 3.80 | 35.40 | 113 | Cmp, CYL(Clp) | Cavitous dark grey marble beneath 100 mm of completely weathered siltstone. |
| 18 | 17443 | 34150 | 4.71 | 2.60 | 6.70 | 71 | Jtw | Metatuff interbedded with tuff with marble clasts. |
| 19 | 16858 | 35415 | 6.56 | 1.50 | 6.10 | 58 | Cmp | Metasiltstone and metasandstone. |
| 20 | 18110 | 36655 | 2.17 | - | 8.70 | 89 | Cmp | Metasiltstone, metasandstone with minor metaconglomerate. |

Appendix 1 (continued)

| BGS No. | Grid Reference | | G.L. (mpd) | Depth to Base of Fill | Depth to Superficial Deposits (mpd) | Total Depth | Formations Proved | Comments |
|---------|----------------|-------|------------|-----------------------|-------------------------------------|-------------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| | East | North | | | | | | |
| 21 | 18560 | 33847 | 5.47 | 1.70 | 8.00 | 72 | Jtw | |
| 22 | 20470 | 32212 | 9.88 | 2.50 | 21.50 | 149 | CYL(Cmt) | Good sequence of pale grey to white marble. Quartzite at base. |
| 23 | 20997 | 32252 | 9.68 | 10 | 15.30 | 154 | Cmp, gfm, CYL(clp) | Completely weathered sequence to 149 m with dark marble at base. |
| 24 | 20279 | 31553 | 13.16 | 2.20 | 45.70 | 104 | CYL(Cmt) | Most southerly proving of cavitous Ma Tin Member. |
| 26 | 23667 | 39583 | 4.56 | 3.10 | 42.50 | 193 | Cmp(Sh), Cmp(gr), CYL(Clp) | Unusual red metasandstone facies of Cmp. Dark grey marble at base. |
| 27 | 23122 | 39567 | 10.07 | - | - | 154 | Cmp(sh), Cmp(gr) | Thick sequence of graphite schist. |
| 28 | 23212 | 39830 | 3.40 | 2.00 | 24.50 | 143 | Cmp, Cmp(gr) | Metasandstone and graphite schist. |
| 29 | 23097 | 40048 | 3.91 | 1.00 | 22.70 | 45 | Cmp, Cmp(Sh) | Metasandstone. |
| 33 | 24348 | 41546 | 3.77 | 0.90 | 21.50 | 40 | gfm | Granite with fluorite mineralisation. |
| 34 | 24470 | 41384 | 3.49 | - | 20.50 | 59 | Cmp(Sh) | Phyllite associated with granite (BGS 33). |
| 35 | 24545 | 41263 | 4.07 | - | 19.30 | 44 | Cmp(Sh) | Phyllite. |
| 36 | 25312 | 41971 | 3.65 | - | 14.50 | 63 | gr, Cmp | Granite faulted against schistose metasiltstone. |
| 38 | 20672 | 34016 | 4.08 | 3.10 | 15.20 | 40 | Cmp(gr), CYL(Clp) | Contact of Cmp overlying CYL(Clp?). Unconformity or thrust. |
| 39 | 22252 | 34214 | 3.85 | 2.20 | 5.70 | 44 | gd | Granodiorite. |
| 41 | 21255 | 34416 | 4.76 | 2.60 | 17.00 | 52 | gd | Granodiorite. |
| 42 | 27576 | 42894 | 5.07 | 1.00 | 18.40 | 41 | Cmp | Metasiltstone. |
| 43 | 27633 | 43256 | 3.99 | 1.00 | 12.50 | 31 | Cmp | Metasiltstone. |
| 44 | 28762 | 43532 | 5.69 | - | 14.00 | 35 | Cmp | Metasandstone and phyllite. |
| 45 | 33481 | 45328 | 9.47 | 1.60 | 6.15 | 21 | Cmp | Metasandstone. |
| 46 | 22624 | 38864 | 6.96 | - | 27.90 | 155 | CYL(Clp) | Marble, siliceous. |
| MR | 20545 | 33554 | ≈5.0 | ≈5.0 | 31.43 | 430 | CYL(Cmt), CYL(Clp) | Continuous sequence through Ma Tin Member to Long Ping Member. Numerous quartzphyric rhyolite dykes. Retained in HKGS archives. |
| DB | 20675 | 37545 | 3.77 | 2.00 | 18.20 | 417 | Cmp | Continuous sequence through Mai Po Member. Retained in HKGS archives. |

Appendix 2

Classification of Zircons by Colour and Morphology Analyses by A.C. Morton, British Geological Survey

| Location | | Colourless | | | Purple | | | Brown | | | C | Total | | Roundness Index |
|---------------|-------|------------|----|----|--------|----|----|-------|---|---|----|-------|---|--------------------|
| | | E | S | R | E | S | R | E | S | R | | P | B | |
| BGS 7 | 118.3 | 3 | 48 | 4 | - | 32 | 11 | - | 2 | - | 55 | 43 | 2 | +12 |
| BGS 11 | 99.6 | 2 | 50 | 10 | 3 | 23 | 8 | - | 3 | 1 | 62 | 34 | 4 | +14 |
| BGS 26 | 119.6 | 5 | 45 | 4 | 1 | 32 | 8 | - | 4 | 1 | 54 | 41 | 5 | +7 |
| Ammonite site | | 2 | 55 | 14 | 1 | 21 | 4 | - | 3 | 1 | 71 | 26 | 3 | +15 |

E = Euhedral S = Subhedral R = Rounded or anhedral
C = Colourless P = Purple & pink B = Brown (including metamict)

Roundness index = $R_{tot} - E_{tot}$

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Appendix 3

Heavy Minerals in Cavity Fill and Associated Sediments in the Marble of Yuen Long Analyses by A. C. Morton, British Geological Survey

| | ANATASE | APATITE | DIOPSIDE | EPIDOTE | GARNET | RUTILE | TITANITE | TOURMALINE | TREMOLITE | ZIRCON | ZOISITE |
|--------|---------|---------|----------|---------|--------|--------|----------|------------|-----------|--------|---------|
| BGS 1 | 13.0 | 18.0 | | | 4.0 | | | 48.0 | | 30.0 | |
| BGS 2 | 76.3 | 0.5 | 0.5 | | | Rare | 1.5 | 0.5 | 78.5 | Rare | 19.0 |
| BGS 24 | 55.7 | | 0.5 | 77.5 | 0.5 | | | | 13.0 | Rare | |
| BGS 26 | 27.3 | | 0.5 | | 28.5 | | | 0.5 | 69.0 | 0.5 | |

Appendix 4

Microfossil Determinations of Samples from the Carboniferous San Tin Group Analyses by B. Owens, Biostratigraphy Group, British Geological Survey

11/A41 BGS 15 BGS 15 BGS 13 BGS 34

SPECIES

Acanlotriletes sp.

Calamospora sp.

C. pallida (Loose) Schopf, Wilson & Bentall

C. microrugosa (Ibrahim) Schopf, Wilson & Bentall

Cingulizonates sp. ?

Crassipora sp. ?

Densosporites sp. ?

D. anulatus (Loose) Smith and Butterworth

Dictyotriletes sp.

Loplotriletes sp.

Lycospora pusilla (Ibrahim) Somers

Punctatisporites ? ?

A post Tournaisian, Carboniferous age is suggested, ie, Viséan or younger.

Appendix 5

Minerals in Insoluble Residues from Yuen Long Marbles, Identified Using XRD Methods, by British Geological Survey.

| Location | Major minerals | Minor minerals |
|----------------|--------------------------------------------------------------------------|-------------------------------------------------|
| BGS 5 27.80 m | Chlorite, Talc, Amphibole | Goethite, Mica |
| BGS 5 38.60 m | Chlorite, Talc, Amphibole (Hornblende Tremolite), Pyrite, Mica | Feldspar (Orthoclase) ?Kaolinite |
| BGS 5 53.95 m | Chlorite, Talc, Amphibole, Pyrite, Mica | Quartz, ?Boehmite |
| BGS 5 95.80 m | Quartz, Chlorite, Mica, Pyrite | Amphibole, Feldspar (Orthoclase), ?Kaolinite |
| BGS 5 176.44 m | Mica, Feldspar (Orthoclase > Albite), Haematite | Chlorite, Amphibole |
| BGS 5 189.73 m | Quartz, Mica, Feldspar (Orthoclase > Albite > Plagioclase), Haematite | Amphibole |
| BH 16 48.30 m | Mica, Smectite | Quartz, Chlorite |

Appendix 6

Heavy Minerals from Sandstones in the Yuen Long Area Analyses by A.C. Morton, British Geological Survey

| | APATITE | CLINOPYROXENE | CHROMITE | GARNET | RUTILE | TOURMALINE | ZIRCON |
|---------------|---------|---------------|----------|--------|--------|------------|--------|
| BGS 7 118.30 | 58.5 | | 0.5 | | 12.5 | 3.0 | 25.5 |
| BGS 11 99.60 | 18.0 | | | | 0.5 | 2.0 | 71.0 |
| BGS 26 138.30 | 4.0 | | | 0.5 | 8.5 | 2.0 | 85.0 |
| BGS 28 58.75 | 5.0 | | | 12.0 | 24.0 | 28.0 | 24.0 |
| Ammonite site | 0.5 | 3.0 | 0.5 | 2.5 | 1.0 | 3.0 | 89.5 |

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Appendix 7

Carbo 14 Dating of Quaternary Deposits in teh District Analyses by the Institute of Geological Sciences of Guangdong, 1989

| Hong Kong No. | IGS No. | C-14 Age | Depth in BGS 12 (metres) | Lithology |
|---------------|---------|--------------|--------------------------|---------------|
| 9070 | 890 978 | 20 920 ± 540 | 12.20 | Marine clay |
| 9063 | 890 973 | 21 840 ± 550 | 13.00 | Marine clay |
| 9062 | 890 972 | 26 950 ± 570 | 20.20 | Alluvial sand |
| 9061 | 890 971 | 27 320 ± 620 | 21.10 | Debris flow |
| 9064 | 890 974 | 27 770 ± 600 | 21.40 | Debris flow |
| 9067 | 890 977 | 37 430 ± 430 | 37.10 | Karst deposit |
| 9066 | 890 976 | 37 910 ± 900 | 37.42 | Karst deposit |
| 9065 | 890 975 | 38 260 ± 970 | 37.65 | Karst deposit |