

Abstract

A fully cored hole at Snug Tiers [EN18062894] proved a long sequence of Lower Parmeener Super-Group strata. The succession is as follows: Ferntree Formation (14.2 m); Risdon Sandstone (8.44 m); Minnie Point Formation* (71.36 m); Deep Bay Formation* (167.99 m); Hickman Formation* (21 m); Bundella Mudstone (28.5 m). The hole terminated at a depth of 259.6 m.

INTRODUCTION

The Oyster Cove region is known to be an area of rapid lateral change in the stratigraphy of the Lower Parmeener Super-Group. To the north and east the stratigraphy is much like that of the Hobart area while to the west the succession is that of the Cygnet region. The hole was sited to investigate the middle part of the Lower Parmeener Super-Group in this area of rapid change where poor and discontinuous surface outcrop renders interpretation impossible from surface exposure alone.

The bore began in typical Ferntree Mudstone (14.2 m) and then passed in turn through Risdon Sandstone (8.44 m, Minnie Point* or Malbina Formation (71.36 m), Deep Bay Formation* (167.99 m), Hickman Formation* (21 m) and terminated after penetrating 28.5 m of Bundella Mudstone.

Beds higher and lower in the succession than those proved in the bore are well known from surface outcrop and the main importance of the bore succession is that it serves to link these beds into a complete standard sequence for the area and completes the Lower Parmeener Super-Group succession for this area.

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* Unpublished formation names.

GEOLOGICAL LOG OF SNUG TIERS NO. 1 DIAMOND DRILL HOLE

Depth (m)	Description	Formation
0.00 - 14.20	Mudstone, grey, silty, fine cross lamination or ripple marks. Small dropped pebbles. Pyrite along joints. Disseminated pyrite in some parts of core. Bioturbate.	FERNTREE ←MUDSTONE
14.20 - 18.03	Sandstone, medium- to coarse-grained, feldspathic. A few small patches of pyrite. Some wisps of carbonaceous and muddy material. Coarse and conglomeratic (quartz sandstone) in lowest 400 mm.	↑ RISDON SANDSTONE
18.03 - 18.62	Siltstone, dark grey, heavily bioturbate. Disseminated pyrite throughout. Coarse towards base and with small white granules.	
18.62 - 18.82 ^b	Sandstone, coarse to granular in grade; with much intermixed siltstone.	
18.82 - 19.32	Sandstone, coarse and conglomeratic.	
19.32 - 22.64	Sandstone, coarse-grained, feldspathic; grey and brown weathering.	↓
22.64 - 22.98	Siltstone, light grey, crumbly, weathered.	↑
22.98 - 23.08	Sandstone, medium-grained, with fossil shell fragments (as moulds).	
23.08 - 23.50	Sandstone, medium-grained, unfossiliferous, otherwise similar to sandstone immediately above.	↑ MALBINA 'E'
23.50 - 25.10	Siltstone, soft. Light cream to light grey in colour. Fossiliferous - <i>Strophalosia</i> and spiriferids. Small break in core here. Paper in core box - used to stop water loss. Core deeply weathered from 21.48 - 26.55 m.	
25.10 - 26.65	Mudstone, grey, fossiliferous, creamy brown weathering. Fossils common. Some entire, many fragmented. <i>Strophalosia</i> common.	↓
26.65 - 66.00	Siltstone, medium to light grey, wispy bedded. Grey in colour. Bioturbate. Disseminated pyrite. Small dropped pebbles. Many granule size quartzes. Mainly unfossiliferous but with some scraps of fossils (spiriferid at 31.65 m). A few fossils towards base. Much of core has a mottled appearance due to a large amount of granular quartz fragments.	↑ MALBINA FORMATION
66.00 - 77.00	Siltstone, grey, bioturbate. In parts passes into silty sandstone. Wispy bedded. Dropped pebbles throughout. A 30 mm band at approx. 71 m has moulds of small shells and also plant fragments. Small spiriferids in 20 mm of rock at 72 m.	

GEOLOGICAL LOG OF SNUG TIERS NO. 1 DIAMOND DRILL HOLE (continued)

Depth (m)	Description	Formation
77.00 - 85.60	Sandstones, grey, bioturbate, silty. Mottled. Much granular material. Dropped pebbles. Some thin irregular carbonaceous partings. Sandstone coarsens downwards. Dark grey in colour. Fossil fragments as cavities at 81.70 m and 81.90 m and again at 82.60 m where they are found in a 40 mm thick band.	MALBINA FORMATION
85.60 - 94.00	Sandstone, soft, coarse-grained. Dark grey and black in colour. Crumbly. Fossiliferous throughout. Some thin siltstone bands. Fossils include high spired gastropods, pectens, <i>Fenestella</i> , spiriferids, and <i>Grantonia</i> . Sandstone becomes silty towards the base.	
94.00 - 119.00	Siltstone, light grey, brown weathering. Highly fossiliferous. Heavily bryozoan. Fenestellids and stenoporidae. Also spiriferids and small ?martiniopsids. Siltstone passes into fine sandstone at 102.80 m and from then on alternating runs of sandstone and siltstone grade into one another. Highly fossiliferous throughout. Mainly bryozoa but with some shells. Dropped pebbles throughout. <i>Keeneia</i> . (Typical Cygnet Grange lithology).	DEEP BAY FORMATION = ('CYGNET GRANGE')
119.00 - 120.00	Siltstone, bioturbate, grey, unfossiliferous, some disseminated pyrite.	
120.00 - 121.00	Siltstone, light to dark grey in colour, with fine-grained silty sandstone. Bioturbate. Fossils present but as moulds only. Small dropped pebbles.	
121.00 - 136.86	Siltstone and silty sandstone, dark-grey, bioturbate. Wispy bedded. Scattered fossil fragments throughout. Fossils as single valves (not identifiable). Sparsely fossiliferous. Some bryozoa. Dropped pebbles and boulders. Fairly uniform lithology.	
136.86 - 176.50	Siltstone, hard, dark-grey, similar to above but highly fossiliferous. Some dropped pebbles. Bioturbate. <i>Strophalosia</i> , bryozoa. Ribbed spiriferids. Bright coal streak at approx. 152.50 m - ?plant stem. <i>Grantonia</i> at 153 m. <i>Schuchertella</i> at 156 m. Probably limy at 174.50 m.	
176.50 - 184.50	Siltstone, dark-grey, fossiliferous, as above but with much comminuted shell debris.	
184.50 - 190.60	Siltstone and muddy siltstone - little comminuted shell debris. Heavily bryozoan. Dark grey in colour.	

GEOLOGICAL LOG OF SNUG TIERS NO. 1 DIAMOND DRILL HOLE (continued)

Depth (m)	Description	Formation
190.60 - 200.60	Siltstone, grey. Similar to siltstone above but less fossiliferous. Bioturbate. Some darker more laminated more muddy bands. Plant fragments at 199.90 m.	↑ HICKMAN FORMATION
200.60 - 202.20	Mudstone, black, laminated, unfossiliferous.	
202.20 - 203.50	Siltstone, massive, black, very hard, unfossiliferous, uniform lithology.	
203.50 - 204.02	Siltstone, mottled, very highly bioturbate, with much small granule material. A few small shell fragments and comminuted shell debris.	
204.02 - 205.42	Siltstone, hard, black, unfossiliferous, uniform lithology.	
205.42 - 205.60	Siltstone, bioturbate, with quartz granule material and comminuted shell debris.	
205.60 - 207.00	Mudstone, hard black, unfossiliferous - uniform lithology.	
207.00 - 207.07	Granule conglomerate, mottled, bioturbate, with shells and shell fragments.	
207.07 - 210.28	Siltstone, black, unfossiliferous except for irregular and scattered patches of comminuted coquinoid debris.	
210.28 - 211.60	Siltstone, black alternating with patches of bioturbate comminuted shell debris. Plant fragments at 211.40 m.	
211.60 - 212.60	Siltstone and granule conglomerate - much comminuted shell debris. Bioturbate.	
212.60 - 213.60	Siltstone, dark grey, alternating with beds of cross-bedded, fine-grained, grey sandstone. Individual sandstone beds up to 60-70 mm thick. No fossils.	
213.60 - 218.60	Siltstone, dark-grey to black with a few thin (5 mm) sandier laminated beds. Comminuted shell debris common in patches in the lowest 2 m. No large fossils.	
218.60 - 220.60	Siltstone, grey, unfossiliferous, uniform lithology.	
220.60 - 223.80	Siltstone, dark-grey unfossiliferous. A few bioturbate bands with pebbles and comminuted shell debris. Siltstone predominates. Plant fragments at 222.90 m.	

GEOLOGICAL LOG OF SNUG TIERS NO. 1 DIAMOND DRILL HOLE (continued)

Depth (m)	Description	Formation
223.80 - 230.60	Granule-conglomerate, light-grey, mottled with much comminuted shell debris and some dropped pebbles. A few thin siltstone beds and a 200 mm sequence of cross-laminated fine-grained sandstones and siltstones at 225.9 m. Core heavily bioturbate and all of granule type from 225.9 m downwards.	HICKMAN FORMATION
230.60 - 231.00	Sandstone - fine-grained, cross-laminated, alternating with beds of black siltstone. Sandstone in pods and lenses. Alternations at 10-20 mm intervals.	
231.00 - 231.10	Black unfossiliferous siltstone of uniform lithology.	
231.10 - 238.60	Siltstone, grey, highly fossiliferous. Bioturbate in places. Disseminated pyrite in places. Bryozoa and shell debris throughout.	BUNDELLA MUDSTONE
238.60 - 251.60	Grey siltstone, and laminated siltstone. Bioturbate in places. Similar to beds above but with fewer fossils. Bryozoan. Disseminated pyrite.	
251.60 - 259.60	Siltstone, grey, fossiliferous. Bryozoa and shells throughout.	
	Hole terminated at 259.6 m.	