DEPARTMENT OF
MINERALS AND ENERGY

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

Record 1975/11

AUGER DRILLING, CAPE YORK PENINSULA, 1974

by

D.L. Gibson

Record 1975/11

AUGER DRILLING, CAPE YORK PENINSULA, 1974

by

D.L. Gibson

CONTENTS

SUMMARY

Eleven shallow auger holes were drilled in eastern Cape York Peninsula in 1974 with a Gemco 210B auger drill. The holes:

a) provided information on the rocks underlying areas of residual sand (Czs) in the Kimba Plateau and in low-lying areas near Princess Charlotte Bay;

b) in all cases but one, provided information on the lithology and thickness of Cainozoic units in the area;

c) showed that continental conglomerate and sandstone occur in the basal part of the Gilbert River Formation in the southwest Coen 1:250 000 Sheet area, where it crops out poorly.

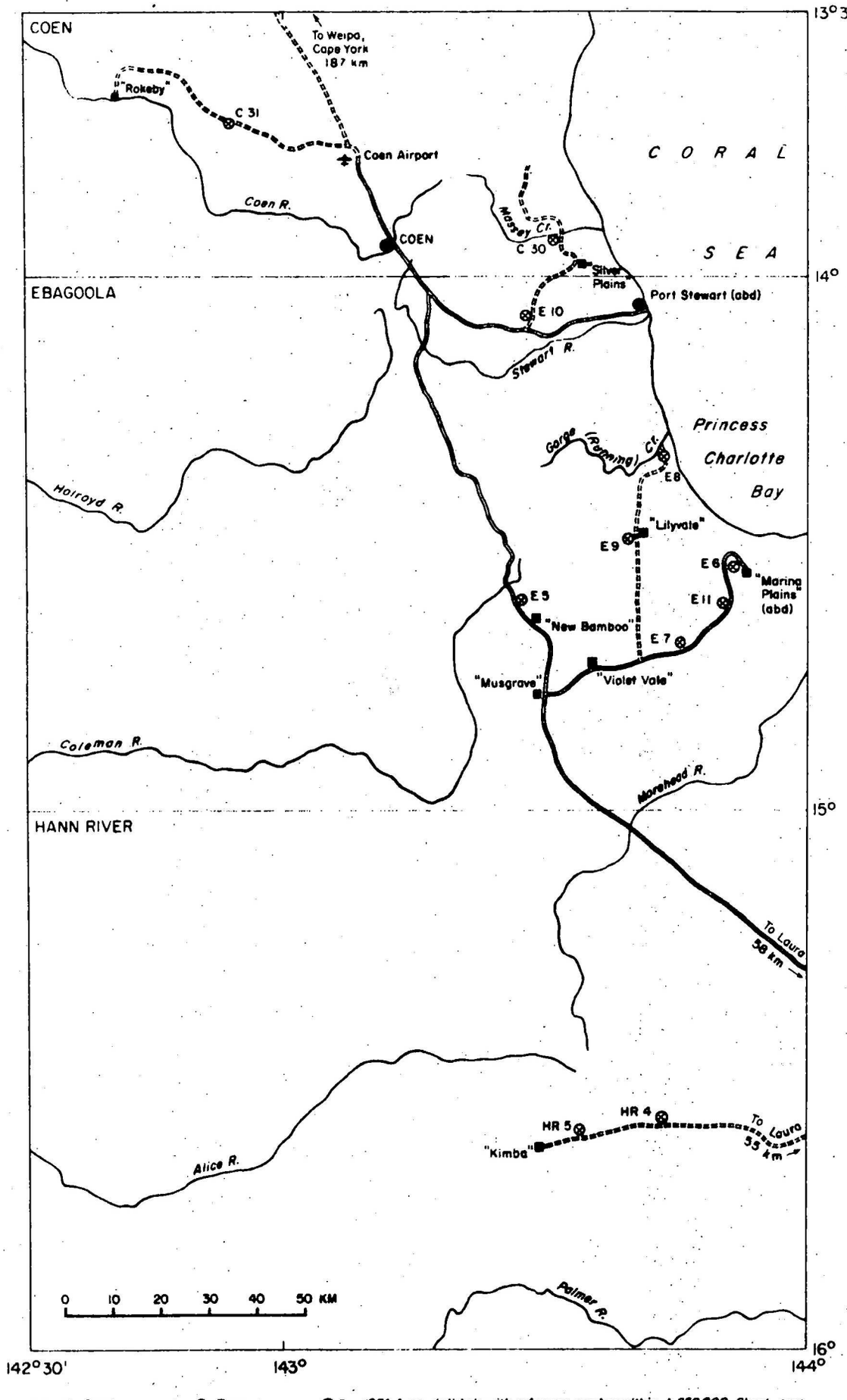

Fig. 1 Locality map

INTRODUCTION

Auger drilling was carried out in Hann River, Ebagoola and, Coen 1:250 000 Sheet areas in Cape York Peninsula, Queensland, in August and October 1974, using a new Gemco 210B auger drill. Eleven holes were drilled to an aggregate depth of 158.7 m.

The general objects of the augering were to provide stratigraphic information in areas of poor exposure, and to drill again in areas where earlier drilling with a smaller auger (Smart et al., 1974) had failed to penetrate deeply. In addition the augering was used to acquaint BMR drilling personnel with the drill before it was used in a groundwater survey in the west of Cape York Peninsula (Pettifer et al., in prep.). This Record follows earlier Records reporting augering (Smart et al., op.cit) and rotary drilling (Gibson et al., 1974) in the area.

The holes are named by 1:250 000 Sheet areas, i.e. BMR Ebagoola 7 is the seventh hole drilled by BMR in the Ebagoola 1:250 000 Sheet area. Holes in the Coen Sheet area are shown on the Second Preliminary (1975) Edition, and those in the Hann River and Ebagoola Sheet areas will be shown on the First Editions of those Sheets. The approximate positions of 1974 auger-drill holes covered in the record are shown in Figure 1.

Stratigraphic nomenclature is based on that of Smart et al. (1971), Smart et al. (1972), and Willmott et al. (1973). The unnamed units used are those on the Preliminary 1:250 000 Sheets of the area (Doutch et al., 1973), and those of Doutch (in prep.).

Two types of augers, hollow and solid, were used. It was planned to use the hollow augers in most holes, as wireline-operated sampling equipment could be used with them. However, the hollow augers were slow and difficult to use, and lacked the penetration of the smaller solid augers

in harder sediments; in addition, the sampling equipment did not function well. Consequently, solid augers were used in Ebagoola 6, 7, 8, 9, 10, and 11, and Coen 31. As there were only seven lengths (total 12.8 m) with the rig at the time of drilling all holes except Ebagoola 11, depth of drilling was limited. All depths were originally recorded in feet, and later converted to metres.

All cutting samples are stored at the BMR Core and Cuttings Laboratory, Fyshwick, A.C.T., and are available for examination.

BMR HANN RIVER 4 — Depth 8.2 m

LOCATION: Kimba-Fairview road, 2.4 km west of yards, about 26 km east of Kimba homestead. 15°35'S, 143°43'E.

PURPOSE: To help determine the nature of the sediments underlying the Kimba Plateau.

LOG (m)

0–2.4	poorly sorted medium to coarse quartzose sand, white at surface, then rapidly grading through orange to red.
2.4–3.0	sand as above, with red-brown nodules of ferruginized clayey sand.
3.0–6.0	red poorly sorted medium to coarse quartzose sand.
6.0–8.2	sand as above with a little yellowish clayey sand. The hole was abandoned at 8.2 m because the hollow augers were jamming.

INTERPRETATION: No definite interpretation could be made. See BMR Hann River 5 for further comments.

BMR HANN RIVER 5

LOCATION: Kimba-Fairview road, 9.2 km east-northeast of Kimba homestead. 15°35'S, 143°33'E..

PURPOSE: To help determine the nature of the sediments underlying the Kimba Plateau.

LOG (m)

0–17.7	orange, rapidly grading to red, medium to very fine clayey to very clayey quartzose sand; a little white clayey fine to medium sand between 9.1 and 12.2 m.
17.7–17.8	coarse-grained quartzose sandstone. Difficult drilling.

INTERPRETATION: Probably deeply weathered Bulimba Formation to 17.7 m, overlying Gilbert River Formation. The sediment in BMR Hann River 4 is probably also deeply weathered Bulimba Formation.

BMR EBAGOOLA 5 Depth 6.4 m

LOCATION: In a dried-out swamp at the head of a watercourse, 50 m east of Kennedy Road, about 4.5 km northwest of New Bamboo homestead. 14°37'S, 143°27'E.

PURPOSE: To determine the nature and thickness of alluvial fill in the watercourse, which is in the Strathgordon Surface (Doutch, in prep.).

LOG (m)

0–1.2	dark grey sandy organic clay.
1.2–1.8	dark grey fine to coarse clayey sand.
1.8–6.4	medium grey coarse sand, which is definitely in situ weathered granite by 4.2 m. Wet from 2.3 m (fresh water).

INTERPRETATION: Valley fill alluvium (Qpa) to 1.8 m, then in situ weathered granite.

BMR EBAGOOLA 6 Depth 12.2 m

LOCATION: 2 km northwest of the abandoned Marina Plains homestead on the road to Musgrove, about 30 m southwest of the road, and on a sand ridge. 14°32'S, 143°52'E.

PURPOSE: To determine the nature and thickness of the abandoned beach ridge, whether it is underlain by marine clay, and the depth to the Lilyvale Beds.

LOG (m)

0–1.8	grey, then brown, poorly sorted coarse quartzose sand.
1.8–2.4	white sand as above.
2.4–6.7	dark grey mud. Wet from about 6.4 m (quality of water unknown).
6.7–12.2	sandy clay and clayey sand, medium to coarse, colour variable from reddish brown to light greenish grey, with red and yellow staining.

INTERPRETATION: Beach ridge sand (Qhm) to 2.4 m, coastal alluvium (Qac) to 6.7 m, then Lilyvale Beds (Czv).

BMR EBAGOOLA 7 Depth 12.2 m

LOCATION: 21 km east of Violet Vale homestead on the road to Marina Plains, at a major bend in the road. 14°42'S, 143°46'30"E.

PURPOSE: To determine the nature of the Lilyvale Beds in the area.

LOG (m)

0–1.2	very poorly sorted fine to coarse quartzose sand.
1.2–1.8	very poorly sorted gravelly quartzose sand.
1.8–4.6	fine to medium quartzose sandstone, indurated - slow drilling.
4.6–5.5	medium to coarse sandy clay - easy drilling. Wet (fresh water).
5.5–7.3	coarse very clayey quartzose sand. Damp.
7.3–9.4	coarse slightly clayey quartzose sand - easy drilling
9.4–12.2	coarse clayey quartzose sand - harder drilling. Wet from 10.4 m.

INTERPRETATION: The Lilyvale Beds have variable lithology, as shown in the log.

BMR EBAGOOLA 8 Depth 12.2 m

LOCATION: 4.5 km south from Gorge (Running)Creek along track to Lilyvale. 14°21'S, 143°43½'E.

PURPOSE: To determine what rocks underlie an area of red sand (Czs).

LOG (m)

0–8.3	brown, rapidly changing to red, poorly sorted very fine to coarse silty and clayey quartzose sand.
8.3–12.2	sand as above with small chunks of ferruginized poorly sorted sandstone. Wet from about 10.7 m (fresh water).

INTERPRETATION: Residual sand (Czs), overlying Mesozoic sandstone (JK).

BMR EBAGOOLA 9 — Depth 12.2 m

LOCATION: 1.6 km southwest of Lilyvale homestead, on and near the edge of a large sand ridge. 14°30'S, 143°40'E.

PURPOSE: To determine the nature of the sediment in the sand ridge, and the underlying rocks.

LOG (m)

0–10.1 white to light grey medium-grained moderately well sorted slightly clayey quartzose sand. Easy drilling. Wet from about 5 m (fresh water).

10.1–12.2 Pinkish to light greenish medium-grained poorly sorted sandy clay or clayey sand.

INTERPRETATION: The sand encountered in the first 10 m of the hole is similar to that in BMR Coen 4 and Coen 8, 70 km to the north (Smart et al., 1974), where it overlies sandstone of probable Mesozoic age (JK). However, the sediment below the sand in this hole appears to be Lilyvale Beds (Czv). As the hole was drilled at the edge of the sand ridge, in an area which airphoto interpretation suggests is made up of sand washed down from the ridge onto the surrounding plain, which is underlain by Lilyvale Beds, it is possible that sand in the main part of the ridge is not underlain by Lilyvale Beds. Airphoto interpretation indicates that the sand is underlain by Mesozoic sandstone.

BMR EBAGOOLA 10 — Depth 12.2 m

LOCATION: About 13.5 km southwest of Silver Plains homestead on the new road to Coen, within 100 m of BMR Ebagoola 3

(Smart et al., 1974). 14°05'S, 143°29'E. On an area of red sandy soil with tall timber.

PURPOSE: To determine whether this area is underlain by Lilyvale Beds (Czv) as suggested by Smart et al. (op. cit.), or older rocks.

LOG (m)

0–0.6	grey medium-grained sand.
0.6–2.1	yellow-brown medium-grained sand with red ferruginous nodules about 1 cm long.
2.1–8.5	white medium to fine, sandy clay with fragments of red ferruginized schist, originally composed of quartz, muscovite, and ?feldspar.
8.5–9.8	white and yellow fine to coarse sandy clay, with muscovite.
9.8–12.2	pink medium to coarse very clayey sand or sandy clay, with muscovite common, and fragments of ferruginized schist up to 3 cm long. Wet from about 10.7 m (fresh water).

INTERPRETATION: The hole penetrated colluvial sand (Czs) overlying weathered metamorphics (Coen Metamorphics, Bc).

BMR EBAGOOLA 11 Depth 17.7 m

LOCATION: 500 m north of an east-west seismic line on the Musgrave/Marina Plains road, about 4.5 km southwest of the abandoned Marina Plains homestead. 13°35'S, 143°51'W.

PURPOSE: To determine whether Lilyvale Beds or older rocks underlie an area of residual sand east of the Palmerville Fault zone.

LOG (m)

0–0.6	grey fine to very coarse quartzose sand and granules.
0.6–1.2	pale yellow slightly clayey fine to very coarse quartzose sand and granules.
1.2–3.0	nodules of yellow, red, and brown-stained cemented, slightly clayey sand in a matrix of brown fine to very coarse slightly clayey sand and granules.
3.0–4.7	pale brown slightly clayey very poorly sorted coarse to very coarse sand and granules.
4.7–9.4	pinkish-white and mauve siltstone with interbeds of coarse-grained quartzose sand.
9.4–15.2	grey medium to very coarse sand and granules. Some clay matrix.
15.2–17.7	brown (with white mottles) siltstone.

The hole was dry when drilled but then slowly made water.

INTERPRETATION: The hole penetrated Lilyvale Beds. The siltstone at the base of the hole is probably not deeply weathered Rolling Downs Group (Mesozoic), as about 80 m of Tertiary to Holocene rocks was encountered in Marina Plains No. 1 (Minad, 1962), about 8 km to the southwest.

BMR COEN 30. Depth 35.4 m

LOCATION: On the south bank of Massey Creek, on the track from Silver Plains to the Massey River. 13°55'30"S, 143°30'E.

PURPOSE: To determine the thickness and nature of the Lilyvale Beds (Czv) in the area, and to find out whether sandstone similar to that found in BMR Coen 4 (Smart et al., 1974) is present beneath them.

LOG (m)

0-3.0	grey-brown grading to yellow brown, fine to medium sand. Dry.
3.0-3.7	light grey poorly sorted medium to coarse quartzose sand. Wet (fresh water).
3.7-4.0	gravel and coarse sand.
4.0-4.6	medium to coarse sandstone. Hard drilling.
4.6-10.1	medium to very coarse sandstone, with thin (about 5 to 10 cm) bands of harder and softer rock.
10.1-12.2	creamish-yellow clay.
12.2-35.1	medium to very coarse clayey sand, hardness variable.
35.1-35.4	medium to fine sandstone, hard drilling.

INTERPRETATION: Quaternary alluvium (Qa) to 4.0 m, Lilyvale Beds (Czv) to 35.1 m, then Mesozoic sandstone (JK). The sandstone is similar to that described by Smart et al. (op. cit.) in BMR Coen 4.

BMR COEN 31 — Depth 12.2 m

LOCATION: About 23 km west of Coen Airport, on the Coen/Rokeby road. 13°42'S, 142°54'E. The hole was drilled at the same location as BMR Coen 19 (Smart et al., 1974), which was abandoned at 4.9 m.

PURPOSE: To penetrate the Gilbert River Formation and to determine whether continental deposits are present in this unit in the area.

LOG (m)

0–0.9	light reddish brown very poorly sorted fine to coarse quartzose sand.
0.9–2.4	sand as above, but more reddish, with nodules of ferruginous sandstone, especially above 1.5 m.
2.4–4.6	medium to coarse sand with fragments of ferruginized fine to medium sandstone.
4.6–5.2	medium to very coarse sand with fragments of medium-grained sandstone.
5.2–10.4	medium to coarse sand with fragments of medium to coarse clayey sandstone. Most fragments ferruginized, some fresh.
10.4–12.2	conglomerate; quartz pebbles up to 4 cm long in matrix of medium to very coarse, quartzose sand.

INTERPRETATION: Continental conglomerate, and probably continental sandstone of the Gilbert River Formation.

REFERENCES

DOUTCH, H.F., in prep. - Late Cainozoic tectonics and geomorphology of southern New Guinea and Cape York Peninsula. Bur. Miner. Resour. Aust. Rec. (unpubl.).

DOUTCH, H.F., SMART, J., GRIMES, K.G., GIBSON, D.L., & POWELL, B.S., 1973 - Progress report on the geology of the Carpentaria Basin in Cape York Peninsula. Bur. Miner. Resour. Aust. Rec. 1973/187 (unpubl.).

GIBSON, D.L., POWELL, B.S., and SMART, J., 1974 - Shallow stratigraphic drilling, northern Cape York Peninsula, 1973. Bur. Miner. Resour. Aust. Rec. 1974/76 (unpubl.).

MINAD (Mines Administration Pty Ltd), 1962 - Well completion report Cabot-Blueberry Marina No. 1. Bur. Miner. Resour. Aust. Petrol. Search Subs. Acts Rep. 62/1214 (unpubl.).

PETTIFER, G., SMART, J., HORSFALL, M.C., McDOWELL, M.I., and GIBSON, D.L., in prep. - Geophysical and geological groundwater investigation, Cape York Peninsula, 1974. Bur. Miner. Resour. Aust. Rec. (unpubl.).

SMART, J., GRIMES, K.G., and DOUTCH, H.F., 1972 - New and revised stratigraphic names, Carpentaria Basin. Qld Govt Min. J. 73, 190-201.

SMART, J., INGRAM, J.A., DOUTCH, H.F., and GRIMES, K.G., 1971 - Recent mapping in the Carpentaria Basin. New stratigraphic names. Qld Govt Min. J. 72, 227-33.

SMART, J., POWELL, B.S., and GIBSON, D.L., 1974 - Auger drilling, northern Cape York Peninsula, 1973. Bur. Miner. Resour. Aust. Rec. 1974/75 (unpubl.).

WILLMOTT, W.F., WHITAKER, W.G., PALFREYMAN, W.D., and TRAIL, D.S., 1973 - Igneous and metamorphic rocks of Cape York Peninsula and Torres Strait. Bur. Miner. Resour. Aust. Bull. 135.

15