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BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

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Record 1974/137

COOKTOWN, HANN RIVER, AND RUTLAND PLAINS MAGNETIC AND RADIOMETRIC SURVEY, QLD 1974

PRE-SURVEY REPORT

by

K.R. HORSFALL

[redacted]

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CONTENTS

		Page
	SUMMARY	
1.	INTRODUCTION	1
2.	GENERAL GEOLOGY	2
3.	MINERALIZATION	5
4.	PREVIOUS GEOPHYSICS	5
5.	CONCLUSIONS	6
6.	REFERENCES	8

APPENDIX 1 : Stratigraphy of Hann River Sheet Area

APPENDIX 2 : Stratigraphy of Cooktown Sheet area

APPENDIX 3 : Stratigraphy of Rutland Plains Sheet area

PLATES

1. Locality map and general geology

2. Bouguer anomaly map

SUMMARY

During 1974 the Bureau of Mineral Resources proposes to make a regional airborne magnetic and radiometric survey of part of the Carpentaria and Laura Basins, Qld, viz. the 1:250 000 map areas of Cooktown, Hann River, and Rutland Plains. It is expected that the survey will yield information on the depth to magnetic basement and the degree of radioactive intensity of the surface rocks.

This record summarizes the geology of the survey area and discusses previous geophysical work.

1. INTRODUCTION

An airborne regional magnetic and gamma-ray spectrometer survey is to be conducted in northern Queensland, commencing in July 1974. The area for the survey is covered by the 1:250 000 map sheet areas of COOKTOWN, HANN RIVER, and RUTLAND PLAINS* (Plate 1).

The purpose of this survey is to complete the coverage between areas surveyed by BMR in 1969 (WALSH, MOSSMAN, and CAIRNS) and 1973 (HOLROYD, EBAGOOLA and CAPE MELVILLE) to enable the depth to magnetic basement of the Carpentaria and Laura Basins to be determined.

Results obtained from the 1969 and 1973 airborne surveys indicate that magnetic anomalies are subdued and relatively extensive in area, and radiometric response is minimal; therefore a line spacing of 3 km is suggested for the current work. As the main strike direction is north-south, the flight-lines should be flown east-west at an altitude of 150 metres above ground level to facilitate use of the gamma-ray spectrometer. The line spacing over the Gulf of Carpentaria should be 6 km.

The area has been mapped geologically; the Geological Series 1:250 000 maps of COOKTOWN (1965) and RUTLAND PLAINS (1973) are available and preliminary copies of HANN RIVER exist. These maps, together with their Explanatory Notes, constitute the main source of material for this pre-survey report. Other important references used are Pinchin (1973), Shelley, Downie & Rees (1971), and Willmott, Whitaker, Palfreymann & Trail (1973).

All of RUTLAND PLAINS and most of HANN RIVER are areas of low topographic relief. COOKTOWN consists of a mountainous region in the southeast and east coastal area while the remainder is mainly flat. Ranges in the southeast reach an altitude of 1100 m. The average height of these ranges is 750 m.

* Throughout this Record the names of 1:250 000 Sheet areas will be written in capital letters to distinguish them from place names.

2. GENERAL GEOLOGY

The following is a summary of the geology taken from Lucas & de Keyser (1965), Needham & Doutch (1973) and Willmott, Whitaker, Palfreyman & Trail (1973). Plate 2 outlines the general geology.

The geology of this area can be divided into three distinct divisions:

1) The Precambrian shield in the centre.
2) The Palaeozoic Tasman Geosyncline in the east.
3) The Mesozoic deposits of the Laura and Carpentaria Basins.

1. Precambrian shield

The oldest rocks exposed in the survey area are of Precambrian age. Presumably they also form the basement rocks of the later geosynclines and basins. They are mainly found in HANN RIVER in the southeast of the Yambo Inlier and north of The Desert in the Peninsula Ridge. The Yambo Inlier is bordered to the east by the Palmerville Fault and the Palaeozoic sediments of the Hodgkinson Basin.

The oldest rocks exposed in the Peninsula Ridge and Yambo Inlier are a sequence of Proterozoic metamorphics (Holroyd Metamorphics, Coen Metamorphics, Dargalong Metamorphics) which have been intruded by portion of a large granitic batholith, the Cape York Peninsula Batholith (Kintore Adamellite, Aralba Adamellite, Flyspeck Granodiorite).

The Tasman Line, which separates the Palaeozoic Tasman Geosyncline in the east from the Precambrian in the west, is represented in the survey area by the Palmerville Fault. This fault, which is down thrown to the east, is regarded as a major structure; it extends from Princess Charlotte Bay in the north to Townsville in the south.

The Proterozoic rocks are overlapped from the west and east by Mesozoic sediments of the Carpentaria and Laura Basins, respectively. Extensive areas of residual Quarternary sand overlie the granitic rocks and the Mesozoic sediments.

2. Palaeozoic Tasman Geosyncline

The Palaeozoic rocks of the Tasman Geosyncline occupy a strip about 120 km wide between the coast and their faulted western boundary with

the Precambrian shield. In COOKTOWN, the Palaeozoic rocks are obscured by the Mesozoic sediments of the Laura Basin.

The oldest rocks exposed in the geosynclinal region are Upper Silurian to Lower Devonian sediments and volcanics of the Chillagoe Formation, which attains a thickness of 1600-3000 metres. These rocks were deposited on a broad continental shelf - the Chillagoe Shelf (Hill, 1951) which forms the western margin of the Palaeozoic rocks. The shelf occurs as a narrow strip about 5 km wide in the southwest of COOKTOWN, faulted against the Precambrian metamorphics.

The major portion of the geosyncline is occupied by the Middle Devonian to ?Lower Carboniferous Hodgkinson Formation. This formation, which is at least 3000 metres thick, consists of volcanics, chert sandstone, and limestone. These sediments are steeply folded, strongly faulted, and have a NNW regional strike.

Permo-Carboniferous

After the deposition of the Hodgkinson Formation, the Tasman Geosyncline region underwent orogeny. Permo-Carboniferous granites (Puckley Granite, Trevethan Granite, Finlayson Granite, Mareeba Granite) were emplaced mainly in the central part of the Hodgkinson Basin. Negative gravity anomalies described by Dooley (1963) indicate possible areas of subsurface granite.

In the COOKTOWN area there are a few small outcrops of Permian shallow-water sediments and coal measures which unconformably overlie the older Palaeozoics. Dyke rocks (unnamed) which intrude the Hodgkinson Formation are also reported. Appendix 1. gives a brief description of the stratigraphy.

3. Mesozoic Basins

Laura Basin

The Mesozoic rocks exposed in the northwest of COOKTOWN were deposited as part of the Laura Basin. The Jurassic Dalrymple Sandstone crops out around the margins of the basin and is unconformable on the Palaeozoic granites and folded sediments. Lucas & de Keyser (1965) reported a general dip of about 5° towards Fairview, where a thickness of 300 m of Jurassic and Cretaceous sediments may indicate this to be the deepest part of the basin within the survey area.

The Dalrymple Sandstone consists of 70 to 150 m of conglomerate, grit, sandstone, and minor shale. This is overlain by Lower Cretaceous conglomerate, sandstone, siltstone, and sandy claystone (the Battle Camp Formation and the Wolena Claystone). In the northwest of COOKTOWN, most of the Laura Basin sediments are covered by poorly consolidated Cainozoic sediments.

Appendix 2. gives a brief description of the stratigraphy.

Carpentaria Basin

The nature of the basement rocks in this area is unknown; only Cainozoic sediments are exposed (Needham & Doutch, 1973).

Mesozoic rocks are almost certainly present at depth. They are known from FBH Wyaaba No. 1, a petroleum exploration well drilled in the GALBRAITH Sheet area to the south and from another, ZCL Weipa No. 1, to the north.

The Cainozoic sequence is thought to consist of the continental Bulimba Formation (which may be as old as Upper Cretaceous), and the late Tertiary-Quaternary continental Wyaaba Beds (Smart et al., 1972); both formations are overlain by Quaternary alluvial and coastal deposits.

The Bulimba Formation is up to 80 m thick and contains mainly clayey quartzose sand, sandstone, and granite conglomerate. This is ferruginized where it is exposed to form laterites (?). Overlying this formation are the Wyaaba Beds which are of similar composition; their thickness is up to 120 m.

For a brief description of the stratigraphy see Appendix 3.

4. Cainozoic

Tertiary sediments and Tertiary basalts crop out in COOKTOWN. Quaternary deposits occur extensively in the north and west of the survey area.

Coral reefs fringe many parts of the coastline and extend to the limits of the continental shelf.

3. MINERALIZATION

The numerous mines and prospects in COOKTOWN indicate the widespread mineralization of the Palaeozoic geosynclinal rocks. The Precambrian rocks are of no economic interest apart from the gold deposits on the Potallah River in the northwest of HANN RIVER.

The area is noteworthy for the variety of its minerals - antimony, gold, tin, tungsten, cobalt, copper, lead, manganese, mercury, and in addition, coal. For a more comprehensive description consult the COOKTOWN Explanatory Notes. (Lucas & de Keyser, 1965).

No concentrations of bauxite have been reported in the ferruginous zone of the Bulimba Beds even though this zone is a continuation of the bauxite surface at Weipa; however, it has not been systematically surveyed.

4. PREVIOUS GEOPHYSICS

The material for this section comes partly from Pinchin (1973) and from Shelley, Downie & Rees (1971).

Gravity

Gravity stations have been read on an 11 km grid throughout the area by BMR. Results from this show a series of north-trending gravity highs separated by gravity lows (Plate 2). One high in HANN RIVER can be related to the denser metamorphic rocks of the Yambo Inlier. Metamorphic rocks of the Peninsula Ridge by contrast appear to be associated with a gravity trough.

The low and high along the western coast in RUTLAND PLAINS could reflect density variations in the crystalline basement. The major gravity anomalies do not reflect thickness of sediments in the basins.

Magnetics and radiometrics

A BMR survey has been flown over CAIRNS, MOSSMAN, and WALSH to the south of this survey (Shelley, Downie & Rees, 1971). In addition 12 lines were flown across COOKTOWN and HANN RIVER. It was found that the region of Precambrian outcrop yielded short-wavelength anomalies of 10-100 gammas amplitude, which are associated with the Dargalong Metamorphics.

The Kintore and Aralba Adamellites exhibited a low magnetic relief. The radiometric results indicated that the Dargalong Metamorphics were more radioactive than the adamellites.

In the Tasman Geosyncline, magnetic anomalies of 30 gammas were attributed to the Chillagoe Formation while anomalies up to 180 gammas correlated with interbedded basin volcanics. The Hodgkinson Formation exhibited a low magnetic relief with anomalies up to 30 gammas.

In the western half of WALSH, over the Carpentaria Basin, a series of negative anomalies were recorded which are possibly due to remanently magnetized dyke-like bodies in the basement. These anomalies may continue into HANN RIVER, in which case they might provide a means for calculating depth to magnetic basement.

Anomalies of up to 150 gammas were recorded over the Laura Basin but their source is not known. It is possible that anomalies of this type might prove useful in determining depth to basement over the basin.

Three lines were flown offshore south of Cooktown, but the magnetic profiles were featureless.

Jenny (1968) describes the aeromagnetic survey covering an area extending from latitude 13°S to 15°45'S and from the Great Barrier Reef westward to the coast. The traverses were flown by Aero Service Limited for Corbett Reef Limited with a 3-km spacing. In COOKTOWN the magnetic field is relatively undisturbed and depth to basement exceeds 3000 m.

Seismic

Seismic depth-to-basement contours indicate that in RUTLAND PLAINS the Carpentaria Basin deepens from 300 m in the northeast corner of the Sheet to 1200 m at the western edge of the Sheet. The Laura Basin deepens to the north in COOKTOWN, reaching 900 m at the northwest corner of the Sheet (Pinchin, 1973).

5. CONCLUSIONS

The magnetic field within the survey area is expected to show anomalies with amplitudes up to 200 gammas. This is indicated from the magnetic results of the 1973 BMR Carpentaria Survey and the Southern Cape York Peninsula Survey (Shelley et al. 1969). The earlier survey

indicated that exposed rock units had little associated magnetic response, data acquired being more useful in basement depth determinations than in lithological correlation.

It is hoped that negative anomalies in WALSH can be traced farther north. They could be used as magnetic markers in determining the depth to basement in the Carpentaria Basin.

The presence of uranium mineralization in the sedimentary areas adjacent to or even remote from areas of igneous or metamorphic outcrop cannot be discounted, and the survey may detect areas of higher than average radioactivity. The lateritic areas in RUTLAND PLAINS might be delineated if they contain thorium.

6. REFERENCES

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APPENDIX I : STRATIGRAPHY OF THE HANN RIVER 1:250 000 SHEET AREA

- after Whitaker and Grimes (in prep.) - Copy from draft of Explan. Notes

AGE	UNIT	LITHOLOGY	REMARKS
CAINOZOIC — QUATERNARY undifferentiated	Qa	Silty or sandy alluvium	Generally merges with residual sand
	Qs	Loose white, grey or red quartz sand	Residual, on granitic rocks, Mesozoic and Cainozoic sediments.
	Ql	Residual clay	Mainly overlies marine Cretaceous?
	Lilyvale Beds (Czy)	Poorly consolidated clayey sandstone and conglomerate	Overlies and abuts against older rocks. Overlain by Qs and Qa.
MESOZOIC			
PROTEROZOIC OR DEVONIAN Cape York Peninsula Batholith	(Ep)	Quartz-feldspar porphyry	Intrudes Coen Metamorphics
	Kintore Adamellite (Ek)	Biotite-muscovite adamellite, some (garnet)-muscovite granite, garnet-muscovite granite-pegmatite and aplite.	Intrudes Dargalong, Coen and Holroyd Metamorphics, and dolerite. Comprises bulk of batholith.
	Aralba Adamellite (Ea)	Porphyritic biotite-muscovite adamellite.	Intrudes Dargalong Metamorphics, dolerite.
	Flyspeck Granodiorite (Ef)	Biotite granodiorite, hornblende-biotite tonalite.	Intrudes Coen and Holroyd Metamorphics.
	Do	Dolerite	Dykes or bodies intruding Dargalong Metamorphics in Yambo Inlier. Intruded by Kintore and Aralba Adamellites.
PROTEROZOIC?	Holroyd Metamorphics (Eh)	Indurated sediments, graphitic slate, (chlorite)-sericite-quartz phyllite, fine-grained (biotite)-muscovite-quartz schist, quartzite coarse-grained mica-quartz schist, biotite-quartz-feldspar gneiss, greenstone, amphibolite, calc-silicate rocks, migmatite.	Metamorphosed in greenschist and amphibolite facies. Intruded by Kintore Adamellite and Flyspeck Granodiorite.
	Coen Metamorphics (Ec)	Muscovite-biotite-quartz-feldspar gneiss and schist, (sillimanite)-muscovite-quartz schist, amphibolite, calc-silicate rocks, migmatite	Metamorphosed in amphibolite facies Intruded by Kintore Adamellite and Flyspeck Granodiorite, quartz-feldspar porphyry.
	Dargalong Metamorphics (Ed)	Biotite-plagioclase-quartz gneiss, lencocratic gneiss, quartzite, amphibolite, plagioclase-muscovite - biotite-quartz schist; (sillimanite)-muscovite-quartz schist, migmatite.	Metamorphosed in amphibolite facies Intruded by dolerite, Aralba and Kintore Adamellites. Restricted to Yambo Inlier.

APPENDIX 2 STRATIGRAPHY OF THE COOKTOWN 1:250 000 SHEET AREA AFTER LUCAS AND de KEYSER (1965)

Period		Formation	Thickness (feet)	Lithology	Correlation	Stratigraphic Relations	Economic Geology
Cainozoic	Quaternary	Coastal marine sediments (Qm)	?	Salt water swamps, lagoonal deposits		Probably interfigners with coastal alluvial deposits	
		Alluvium (Qa, Qb)	Up to 200 ?	Grey silty clay, sand, and gravel (Qa), black and red clay near basalt (Qb)	= Qs	Overlies other formations in valley bottoms	Stanniferous unmapped areas in Tinfield ; gold
		Interfluvial sand (Qs)	Up to 25 ?	Loose orange and white sand	= Qa	Overlies Brixton sediments and older rocks or interfluves	
		Coastal dune sand (Qd)	At least 300	White sand, vegetated and moving		Overlies and abuts against older dune sand and Hodgkinson Formation	Potential water supply ; possible heavy mineral concentration
	Late Cainozoic	Fossil coastal dune sand (Czd)	At least 220	Iron-stained, aeolian, cross-bedded sand	Approx. = Czx ?		
		Piedmont deposits (fans) (Czt)	Up to 200 ?	Earthy fossil breccia slightly ferruginous		Overlies Czx usually below scarp of Dalrymple Sandstone	
		(Czx)	5 to 50 ?	Mottled clayey sand, gritty and pebbly	= Lynd Formation ? (Laing & Power, 1959)	Overlies and abuts against Mesozoic and older rocks ; disconformably succeeds Fairview gravel. Type area near Brixton, north-west of Fairview	
	Tertiary ?	Piebald Basalt (Czp)	Up to 100 ?	Olivine basalt	= McLean Basalt ?	Overlain by alluvium, unconformable on Dalrymple Sandstone and Hodgkinson Formation	Deep gold leads ?
		McLean Basalt (Cze)	Up to 200	Olivine basalt, pyroclasts, gravel	= Piebald Basalt ?	Unconformable on Hodgkinson Formation, disconformably succeeds Dalrymple Sandstone	Minor aquifer. Gemstones reported under basalts
	Tertiary	(Tf)	5-20	Rounded quartzose pebble gravel, sandstone, billy	Approximately equivalent to McLean Basalt ?	Unconformable on Wolena Claystone and Battle Camp Formation ; disconformably succeeded by Brixton sediments. Type area at Fairview	Road metal
Mesozoic	Lower Cretaceous	Wolena Claystone (Klo)	At least 150	Pale-weathering olive-grey silty and sandy claystone with calcareous concretions		Conformably overlies Battle Camp Formation	
		Battle Camp Formation (Klc)	At least 475	Thin ferruginous basal conglomerate, glauconitic sandstone, shaly sandstone, leached shale		Conformable under Wolena Claystone ; disconformable on Dalrymple Sandstone in Battle Camp range, conformable elsewhere ?	
	Jurassic	Dalrymple Sandstone (Jl)	Up to 1000	Quartz sandstone, conglomerate, grit, shale		Conformably (?) and disconformably overlain by Battle Camp Formation ; unconformable upon all older formations	Aquifer. Thin, inferior coal
Palaeozoic	Permian	Normanby Formation (Pn)	At least 2000	Impure sandstone, siltstone, conglomerate, limestone, and coal ; rhyolite		Unconformable upon Hodgkinson Formation, unconformable beneath Dalrymple Sandstone	Inferior coal
		Little River Coal Measures (Pur)	?	Sandstone, shale, impure coal, and limestone		Unconformable upon Chillagoe Formation, unconformable beneath Dalrymple Sandstone	Inferior coal
		Dyke rocks (unnamed)	Up to 300	Microgranodiorite and microtonalite porphyry	= Trevethan Granite ?	Intrusive into Hodgkinson Formation	
			60	Muscovite-albite microgranodiorite porphyry		Intrusive into Hodgkinson Formation	
			2-15	Uralitized dolerite		Intrusive into Hodgkinson Formation and Finlayson and Trevethan Granites	

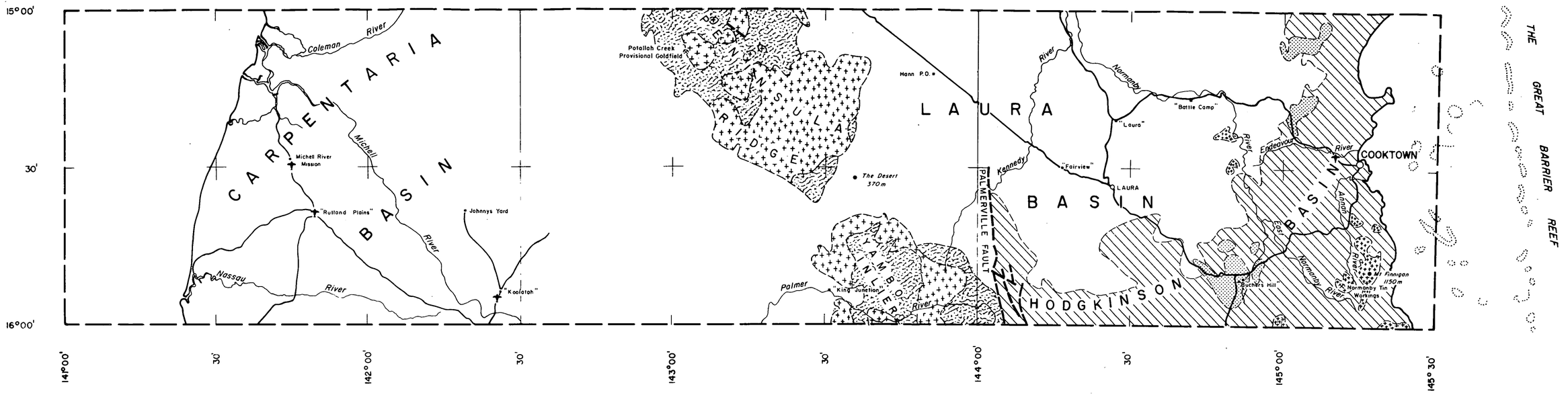
APPENDIX 3 STRATIGRAPHY OF RUTLAND PLAINS SHEET AREA - AFTER NEEDHAM AND DOUTCH, 1973

Age	Rock Unit and Symbol	Thickness (m)	Lithology	Depositional Environment and Process	Stratigraphic Relations; Correlations	Economic Geology	Principal References
QUATERNARY	coastal alluvium (Qac)	<10	Silty clay, silt, quartzose sand	Coastal (Karumba) Plain-paludal, littoral, paralic	Qac part below, part contemporaneous with Qrp, Qm; probably contemporaneous with Qa, and rests on Czy or KTl		Twidale (1956, 1966)
	salt pan deposits (Qrp)	0.05	Silty clay, salt			Little salt	Valentin (1959, 1961)
	beach and sand ridges (Qm)	<5	Coquina, calcarenite, shelly quartzose sand and quartzose sand			Lime from shells; building sand; minor perched aquifers	Whitehouse (1963); Doutch et al. (1970, 1972); Ingram (in press)
	flood plain alluvium and floodout deposits (Qa)	<10	Sand, silt, clay	Alluvial Plain-fluvial	Qa contemporaneous with most Qas, and Qra with youngest Qa. In some places Qas on Qm, and Qa on KTl. All units rest on Czy from place to place	Minor perched aquifers	Galloway et al. (1970); Doutch et al. (1972)
	stream bed sediments (Qra)	<5	Quartzose sand, silt, clay				
	abandoned river channel deposits (Qas)	<5	Quartzose sand			Minor springs?	
?PLIOCENE TO ?HOLOCENE	Wyaaba Beds (Czy)*	up to 120	Poorly sorted grey clayey quartzose sand, sandstone, and granite conglomerate commonly pebbly; claystone	Staaten interfan outwash alluvium -fluvial	Younger Czy contemporaneous with older Qa, etc.; disconformable? on KTl. Lynd Formation of Laing & Power (1959)	Aquifers, usually saline	Warner (1968; Smart et al. (1972)
UPPER CRETACEOUS TO TERTIARY	Bulimba Formation (Ktl)*†	up to 80	Poorly sorted clayey quartzose, sandstone, and granite conglomerate pebbly in places; interbedded sandy claystone	Continental fluvial	Disconformable? on Kln - surface ferruginized (laterite?)	Possible aquifers	Smart et al. (1972)
LOWER CRETACEOUS Rolling Downs Group	Normanton Formation (Kln)*†	90	Sandy clayey siltstone, silty mudstone, minor limestone and sandstone	Shallow marine and paralic	Conformable on Kla; offlaps to NW and SE? Correlated with Mackunda Formation, Eromanga Basin		Smart et al. (1971)
	Allaru Mudstone (Kla)*†	310	Shale, mudstone, some siltstone	Marine	Conformable on Klo; offlaps to NW and SE? Part of Normanton Formation of Meyers (1969). Cenomanian palynomorphs at 261 m in Wyaaba No. 1		Vine et al. (1967); Smart et al. (1971)
	Toolebuc Limestone (Klo)*†	<107	Calcareous shale, limestone	Marine	Conformable on Klu. Kamileroi Formation of Meyers (1969)	Possible uranium, vanadium, shale oil	Vine & Day (1965); Vine et al. (1967); Smart (1972)
	Wallumbilla Formation (Klu)*†	240	Mudstone, some siltstone, minor limestone and shale, glauconitic sandstone	Marine	Conformable on JKg. Blackdown Formation of Meyers (1969)	Possible aquifers	Laing & Power (1959); Vine et al. (1967); Smart et al. (1972)
UPPER JURASSIC-LOWER CRETACEOUS	Gilbert River Formation (Jkg)*†	42+	Clayey quartzose, sandstone, glauconitic in upper part	Shallow marine following fluvial	Conformable on older sandstone in Weipa No. 1; unconformable on basement rocks in Wyaaba No. 1. Wrotham Park Sandstone of Laing & Power (1959)	Excellent aquifers elsewhere	Meyers (1969); Smart et al. (1971); Doutch et al. (1972)
JURASSIC	sandstone in Weipa No. 1 (J)*†	<100	Clayey quartzose sandstone and conglomerate, in part glauconitic; minor shale		Unconformable on basement rocks in Weipa No. 1; may extend as far south as this Sheet area	Aquifers?	Meyers (1969)
PRE-MESOZOIC	basement rocks*		Metamorphosed diorite in Wyaaba No. 1; quartzite feldspathic rock in Weipa No. 1				Meyers (1969)

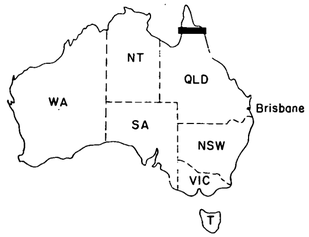
†Section only.
* Data based on Wyaaba No. 1 and other information in Warner (1968) and Meyers (1969).

Period		Formation	Thickness (feet)	Lithology	Correlation	Stratigraphic Relations	Economic Geology
			Up to 140	Granophyric biotite microadamellite porphyry		Intrusive into Hodgkinson Formation and Finlayson and Trevethan Granites	
		Puckley Granite (Pgk)		Coarse porphyritic adamellite ; aplite dykes		All granites intrusive into Hodgkinson Formation	In Finlayson granite, rare tin lodes
		Trevethan Granite (Pgv)		Medium-grained porphyritic hornblende-biotite granodiorite		Puckley Granite and Finlayson Granite (near Cooktown and Mt. Piebald) are unconformably overlain by Dalrymple Sandstone	
		Finlayson Granite (Pgf)		Medium-grained porphyritic adamellite			
		Mareeba Granite (Pgm)		Coarse porphyritic granodiorite and adamellite			
	(?) Lower Carboniferous-Middle Devonian	Hodgkinson Formation (D-Ch)	At least 10 000	Greywacke, slate, minor volcanics, and limestone		Disconformable upon Chillagoe Formation ? Unconformable beneath Permian and younger formations	Limestone ; gold - antimony - quartz veins
	Lower Devonian-Upper Silurian	Chillagoe Formation (S-Dh)	5000 ?	Volcanics, chert, sandstone, limestone		Unconformable upon Precambrian rocks, disconformable beneath Hodgkinson Formation ? Unconformable below other younger formations	Weak Cu and Hg mineralization, limestone
Precambrian	(?) Proterozoic	Dargalong Metamorphics (Pd)	?	Schist, gneiss, amphibolite, quartzite		Unconformable beneath post-Cambrian rocks	

PLATE 1



LOCATION DIAGRAM



REFERENCE TO 1:250000 MAP SERIES

HOLROYD	EBAGOOLA	CAPE MELVILLE
RUTLAND PLAINS	HANN RIVER	COOKTOWN
GALBRAITH	WALSH	MOSSMAN

AIRBORNE SURVEY, CARPENTARIA BASIN, QLD 1973-74

LOCALITY MAP AND GENERAL GEOLOGY

10 0 10 20 30 40 50 60 70 80 90 100 KILOMETRES

10 0 10 20 30 40 50 MILES

GEOLOGICAL LEGEND

- Cainozoic Tertiary Basalts
- Cainozoic and Mesozoic Sediments
- Palaeozoic Granites
- Palaeozoic Granites – Cape York Peninsula Batholith
- Palaeozoic Sediments of the Hodgkinson Basin
- Proterozoic Metamorphics
- Geological Boundary
- Fault

To accompany Record No. 1974/137

16

D54/B1-14

PLATE 2

BOUGUER ANOMALIES

40 0 40 80 120 160 200 KILOMETRES

-15 Bouguer anomaly contours (milligals)

Cambridge Pendulum station

▲ Primary base station

△ Secondary base station

State boundary

Boundary of survey area

Mt Isa 1:250 000 map sheet area

Magnetic and Radiometric Survey Boundary 1974

141°00'

144°00'

11°00'

14°00'

17°00'

Thursday Island (Horn Island)

CAPE YORK

PRINCE OF WALES I.

Jardine River

Orford Bay

Weipa

Cape Weymouth

Aurukun

Coen

Holroyd

Ebagoola

Cape Melville

Iron Range △

Mitchell River Mission

Cooktown △

Cooktown

Galbraith

Dunbar △

Walsh

Mossman

Cairns

Wrotham Park △

THE GREAT BARRIER REEF

(Based on Q/B2-18) *Record No. 1974/137*

17

D54/B1-15