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# CARNARVON BASIN, WESTERN AUSTRALIA
# SUMMARY OF ACTIVITIES, 1955.

by

M. A. Condon & M. C. Konecki.

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## INTRODUCTION

This report gives a short summary of the geological work done by Bureau parties in the Carnarvon Basin, Western Australia, during 1955, and of the main results of that work. The Reconnaissance Gravity Maps of the Carnarvon Basin showing Bouger Anomalies (Maps No. G 98-20 and G 98-32 of the Geophysical Section) were used in discussing the regional structure.

## PERSONNEL

Two parties operated, one under M. C. Konecki with J. M. Dickins, W. M. Burnett, T. Quinlan and D. Moore, the other comprising M. A. Condon and K. G. Smith. The parties worked together for part of the time.

## AREAS SURVEYED

Konecki's party mapped the southern half of the Wooramel and Glenburg sheets, continuing from where the party finished in 1953, and completed the mapping of the Byro four-mile sheet which was started in 1954.

Condon and Smith did a revision survey, re-examining many areas throughout the basin in an attempt to find answers to stratigraphic and structural problems which had arisen during the previous work.

## STRATIGRAPHY

The stratigraphic nomenclature for the whole basin is set out in Table 1, which also indicates the main relationships in and among the various parts of the basin.

### PRECAMBRIAN:

In the area between Moogooree Station and Murchison River the Precambrian basement, marginal to the Basin and in the inliers at Lyons River Station and Carrandibby Range, consists almost everywhere of schist of various types including mica, quartz, hornblende and talc schists. The Mt. Coor-de-wandy area consists of Precambrian sediments, somewhat metamorphosed.

The garnet gneiss of the Ajana area does not outcrop anywhere else in the region.

### PRE-PERMIAN:

During a re-examination of the Lower Murchison River area with the Bureau party, P. E. Playford of West Australian Petroleum Ltd. found very well-preserved foot-and-body tracks in the Tumblagooda Sandstone. These may help in determining the age of this formation which at present is known only to belong somewhere between Precambrian and Permian.

In the Meeberrie-Yallalong area north of the Murchison River, a sequence of quartz greywacke, siltstone and limestone completely un-metamorphosed and only moderately indurated occupies a large asymmetrical syncline with steep west flank (dipping at 70° in places), gentle (4°) east flank, and gentle north plunge. This sequence, for which the name "Badgerradda Beds" is proposed, is about 4,000 feet thick. It rests unconformably on Precambrian schist and is overlapped by the Lyons Group. The discovery by Opik and Tomlinson (1955) of Tetradium in the Yandanooka Group about 200 miles south suggests the possibility that the "Badgerradda Beds" may be the equivalent sequence in the Carnarvon Basin and therefore of Ordovician age.

The relative age of the Tumblagooda Sandstone and the "Badgerradda Beds" is not known. Consideration of their outcrop distribution in conjunction with the map of the Bouger gravity anomalies suggests that the "Badgerradda Beds" are possibly older than Tumblagooda Sandstone.

DEVONIAN-CARBONIFEROUS:

No additional stratigraphic information about the Devonian-Carboniferous sequence was obtained. Additional fossil collections were obtained from the Moogooree Limestone and the Yindagindy Formation.

PERMIAN:

Lyons Group: The Lyons Group was measured in a fairly well-exposed section east and west of Coor-de-wandy Homestead. There, the Lyons Group is 2,660 feet thick and rests unconformably on a rugged surface of Precambrian schist. In one place, four miles east of Coor-de-wandy Homestead, a glaciated pavement was found. A thin section (about 136 feet thick) was measured where it overlaps the southern flank of the Carrandibby Range of Precambrian schist.

In the Williambury area, the Lycopod plant fossils formerly thought to be confined to the Harris Sandstone were proved to occur mainly in the lowermost 300 feet of Lyons Group, although they are present also in the Harris Sandstone at the type locality. The Lyons Group was found to overlap the whole Devonian-Carboniferous sequence near Williambury Homestead; large blocks of limestone of the Gneudna Formation were found in a glacial boulder bed of the Lyons, 2,000 yards west of south of Williambury Homestead. Between Williambury and Moogooree, the Lyons Group overlaps onto the Moogooree Limestone and between Moogooree and Mount Sandiman it overlaps the Carboniferous-Devonian sequence and the Precambrian schist.

In the southern part of Moogooree Station, near the divide between the Minilya and Gascoyne drainage, a ground moraine rests on a near-horizontal surface of Precambrian and Devonian. This occurrence indicates that the Carboniferous regression resulted in erosion of the steeply dipping Lower Carboniferous-Devonian sediments to a surface very close to the present surface; that the main sedimentation of the Lyons Group did not extend over the Precambrian in this area; and that there has been very little erosion in this locality since Lower Permian. The large volume of sediments deposited in the middle Permian must have been derived from highlands further to the east.

Poorly exposed Lyons Group outcrops west of the basin margin for about 40 miles from 7 miles north of Curbur to 10 miles south of Narryer. The western half of this area

extends south across the Murchison River between Bompas Hill and Coolcalalaya.

Callytharra Formation: Sections of the Callytharra Formation were measured at Coor-de-wandy (253 feet thick) and near Congo Creek (250 feet thick). These thicknesses may be compared with the thickness of about 330 feet in the original type locality near Callytharra Springs. Compared with the northern development in the Moogooloo-Lyndon River area there is an absence of the member of hard limestone near the base, and of the whole of the upper part of the formation. In the southern area the difference of thickness of the formation measured in the section on the south-eastern slope of Carrandibby Range Precambrian inlier in the Callytharra Springs and Gap Pool area and the sections in Daurie-Congo Creek area in the east appear to be due mainly to the absence of the lower member of the formation in the latter area. The lower member, which is 135 feet thick near Callytharra Springs and about 193 feet thick in the Gap Pool area is only a few feet thick in Belung Creek area farther east-north-east and appears to be absent in Daurie and Congo Creek areas farther east-north-east still. Thus the existence of a disconformity or nondeposition along the eastern rim of the Basin in the south is indicated.

The southernmost outcrop of the Callytharra Formation was discovered 34 miles south of Callytharra Springs in the base of the long line of scarps on the eastern edge of the Yaringa four-mile sheet. (Lat. 26°22'S; Long. 115°25'E). The outcrop is limited to the ferruginized eroded top of the formation, which is richly fossiliferous, in the base of the scarp, and is unconformably overlain by the pebbly quartz greywacke of the Pindilya Formation of ?Eocene age.

"Carrandibby Shale": A new name "Carrandibby Shale" is proposed for the formation, mainly of shale, calcilutite and minor sandstone with Eurydesma, which rests probably with slight disconformity on the top of the Lyons Group and is conformably overlain by the Callytharra Formation on the Wooramel River at the south-western end of the Carrandibby Range and on the Gascoyne River, 11 miles west of Jimba Jimba Homestead. The type section, on the south side of the Wooramel River at Lat. 25°52'20"S., Long. 115°29'27"E., is 193 feet thick, consisting of soft dark greenish grey shale with red phosphatic nodules and few thin calcareous fine-grained quartz greywacke beds; the uppermost 28 feet is soft silty calcilutite and calcareous siltstone with lenticular hard calcilutite beds and few thin beds of calcareous sandstone, some with pelecypods including Eurydesma.

On the Gascoyne River, the "Carrandibby Shale" consists of 80 feet of siltstone and 60 feet of fine-grained quartz greywacke above. below

The existence of this formation only in the most basinward outcrops of the top of the Lyons Group confirms the existence of a disconformity between the Lyons Group and Callytharra Formation, which had been suspected because of the abrupt change of lithology at the boundary and the existence of a weathered zone at the top of the Lyons Group.

Byro Group: It is proposed to re-define the Byro Group to include the Wooramel Sandstone and the Cordalia Greywacke.

Norton Greywacke: In the Wandagee Hill area, the equivalence of the Norton Greywacke and Teichert's Nalbia Greywacke was confirmed. The stratigraphic position

of some of Teichert's more important (goniatite) fossil localities was checked. The important locality in the Coolkilya Syncline where Paragastrioceras, Pseudogastrioceras Propinacoceras and the shark Helicoprion were found (Teichert, 1942) is definitely in the lowermost part of the Norton Greywacke. The other localities are in areas of poor outcrop or structural complexity which prevent the placing of the localities in their precise stratigraphic position.

Quinnanie Shale: The type section of the Quinnanie Shale was re-measured. The fault in the section was proved to have a stratigraphic throw of only 10 feet and, because of this and of better determination of dip the thickness was found to be 286 feet instead of 515 feet as formerly stated (Condon, 1954).

Cundlego Formation: An incomplete section of the Cundlego Formation was measured in the Gascoyne Junction area. A thickness of 850 feet was measured up to the top of the massive hard calcareous beds containing Limbacrinus. There is perhaps 70 to 100 feet between this and the base of the Wandagee Formation.

Bulgadoo Shale: A poorly exposed section of the Bulgadoo Shale, continuous with that of the Cundlego Formation described above, is 160 feet thick.

Coyrie Formation: A section of the Coyrie Formation, well exposed at the bottom but poorly exposed in the upper part was measured 10 miles north-east of Gascoyne Junction. The Coyrie Formation is about 650 feet thick.

"Middle Camp Formation": The topmost formation of the Byro Group in the Wooramel River area consists of poorly exposed siltstone and fine-grained quartz greywacke. This has been named "Middle Camp Formation". It is known only from the central part of the Byro Syncline north of Bogadi Outcamp.

The top of the formation is an erosion surface and the thickness of the incomplete section was measured at 180 feet. This thickness is doubtful because of poor exposure and unreliable dip measurements.

"Bogadi Greywacke": Conformably underlying the "Middle Camp Formation" is a sequence of carbonaceous fine-grained quartz greywacke with scattered fossils. The formation, named "Bogadi Greywacke" is 200 feet thick. It is known only from the belt peripheral to the synclinal "Middle Camp Formation" from Bogadi Outcamp for about 11 miles north. The "Bogadi Greywacke" probablymay be correlated with the Mallens Greywacke of the northern part of the basin.

"Madeline Formation": A sequence of siltstone, fine-grained quartz greywacke and shale with evaporites, containing many fossil beds some richly fossiliferous was named "Madeline Member" by R. W. McWhae of West Australian Petroleum Ltd. in a company report in 1953. This formation is the only one of the Byro Group in this area with sufficient fossil material for reliable correlation with the formations of the northern part of the basin. Preliminary examination of the fauna by G. A. Thomas and J. M. Dickins indicates that the fauna has most similarities with that of the Coyrie Formation. Its thickness is 395 feet.

"Keogh Formation": Conformably under the Madeline Formation is a sequence of thin-bedded quartz greywacke and siltstone 155 feet thick for which McWhae

used the name "Keogh Formation". This formation can be identified only in the area of the Byro Plains and north to about the Gascoyne-Wooramel divide. It may be correlated with the upper part of the quartz greywacke member forming the lowermost part of the Coyrie Formation.

"One Gum Formation": Conformably under the "Keogh Formation" McWhae separated the "One Gum Formation" consisting of 170 feet of quartz greywacke and quartz sandstone with siltstone members and beds. This may be correlated with the lower part of the lowermost quartz greywacke member of the Coyrie Formation. Like the "Keogh Formation" it can be identified only in the area immediately around its type locality.

In the areas north and south of the Wooramel River formations equivalent to theKeogh and One Gum but different from them outcrop. In the Dairy Creek Station area, this formation consisting of quartz greywacke with siltstone and conglomerate beds has been named "Congo Formation". It rests unconformably on Callytharra Formation or Precambrian and at Bush Creek the exposed part of the formation is 185 feet thick. About four miles north-west of this locality there is at least 25 ft. of fine quartz greywacke stratigraphically below the Bush Creek section. The absence of Wooramel Sandstone is notable throughout this area.

"Monument Formation": In the Coordewandy area around Daurie Creek, the formation of quartz greywacke, quartz sandstone and siltstone conformable between the Callytharra Formation and the Keogh Formation has been named "Monument Formation". It is 398 feet thick and may be correlated with the lowermost quartz greywacke member of the Coyrie Formation and the Wooramel Sandstone.

"Curbur Formation": On the margin of the basin in the area around the boundary between Byro and Curbur Stations, a sequence of quartz greywacke with siltstone beds and pebbly beds rests unconformably on Lyons Group or Precambrian, and is overlain conformably by Madeline Formation. This formation, which is 326 feet thick, has been named "Curbur Formation". It is equivalent to "Congo Formation", to "Monument Formation" and to the lower member of the Coyrie Formation plus perhaps all or part of the Wooramel Sandstone.

Wooramel Sandstone: The Wooramel Sandstone was measured in many places:- in the area 10 miles north east of Gascoyne Junction it is only 30 feet thick and rests with strong erosional unconformity on a rock-stack surface of the Callytharra Formation and conformably below the Coyrie Formation; it is absent in the area between Bush Creek and Daurie Creek; on the Wooramel River it is 545 feet thick - the thickest section of the formation known; a small thickness (less than 100 feet) outcrops at Coolyun Well, Byro Station, but the formation is absent at the Byro-Curbur boundary near the basin margin.

CRETACEOUS:

Windalia Radiolarite: Section of the Windalia Radiolarite west of Wigning Pool was examined in the hope that a complete section of the formation would be found. Muderong Shale was found at the base in two places and poorly exposed Gearle Siltstone was found above (confirmed in an excavated dam), but because of the poor exposures and undulating low dips the section could not be measured satisfactorily.

Gearle Siltstone: The type section of the Gearle Siltstone on the Giralia Anticline was measured and sampled. It was found to contain prominent beds and members of radiolarite near the bottom and near the top. Its thickness was determined as 475 feet although poor exposures and unreliable low dips make this doubtful.

Korojon Calcarenite: The type section of the Korojon Calcarenite in theGiralia Anticline (Condon, Johnstone, Prichard and Johnstone, 1956) was re-examined and re-measured. A calcilutite member 35 feet thick immediately above the base, previously incorrectly thought to be part of the Gearle Siltstone, was proved to be above the disconformity separating the Gearle Siltstone and Korojon Calcarenite. It is included therefore in the Korojon Calcarenite, the thickness of which was measured as 115 feet.

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In the Murchison House area the Cretaceous sequence was re-examined with geologists of West Australian Petroleum Ltd. and a mutually satisfactory nomenclature discussed and decided. A short paper on this sequence is being published in the Australian Journal of Science under the authorship of D. Johnstone, M. A. Condon and P. E. Playford. A summary follows:

Birdrong Formation: As the Birdrong Formation can be followed without break in the water bores of the basin from near the type locality to outcrop at the Murchison River, the name Butte Sandstone or its revision of Tutula Sandstone is redundant. It is proposed to include the Birdrong Formation in the Winning Group.

Thirindine Formation: Bureau geologists separated thin glauconitic sandy marl, thin-bedded to laminated radiolarite bentonitic in some beds, and radiolarian bentonitic shale but as these are not easily separated in outcrop or in bores they were included in the one formation - Thirindine Formation, which may be correlated with the Windalia Radiolarite. The Thirindine Formation outcrops in the scarps on the north side of the Lower Murchison River, at Meanarra Hill near the mouth of the Murchison River, and in the area northeast of Coolcalalaya Homestead.

Alinga Formation: The glauconitic sandstone and siltstone overlying the Thirindine Formation has been named Alinga Formation. It is known in outcrop only from the Lower Murchison River area, but canbe recognised inwater bores. It possibly correlates with the Gearle Siltstone.

Toolonga Calcilutite: The calcareous formation consisting of calcilutite, calcarenite and marl with abundant foraminifera and pelecypods and few crinoids and echinoids has been re-defined as the Toolonga Calcilutite. This outcrops in the Lower Murchison River area, at Yaringa North Station and may be recognised in water bores throughout the area between. It is older than the Korojon Calcarenite although of similar lithology - the upper part of the Toolonga probably is equivalent to the lower part of the Korojon.

TERTIARY:

?Eocene: In the southern part of the basin, from Dairy Creek southwards, a near-horizontal sheet of roughly-bedded quartz greywacke and siltstone overlaps all Permian formation and, around Murchison River, some of the Cretaceous formations. Good fossil material has not been found in it but its stratigraphic relationships and the fact that, like

the Eocene Merlinleigh Sandstone, its surface is strongly lateritized make its Eocene age very likely. This formation has been named "Pindilya Formation". It varies in thickness from place to place depending on the underlying surface, but is commonly about 30 feet.

?Oligocene: Capping a large mesa 7 miles north-east of Williambury Homestead and in large low-lying areas in the Dairy Creek Coor-de-wandy area, a sequence of probably freshwater siliceous limestone, siltstone and sandstone with detrital laterite rests on a lateritized surface of Precambrian schist or Palaeozoic sediments. This formation, named "Nadarra Formation" is 45 to 70 feet thick at Williambury and up to about 30 feet thick in the southern area. It is probably a lake deposit formed at a late stage in the period of strong lateritization when lime and silica from the lateritization process were brought to the surface by a rise in ground water table level. As the Eocene Merlinleigh Sandstone is strongly lateritized, the "Nadarra Formation" is either late Eocene or slightly younger. As the lateritization process apparently did not continue into the lower Miocene in this Basin, the "Nadarra Formation" is not likely to be younger than Oligocene.

Miocene-?Pliocene: The Yardie Group, outcropping in the Cape Range, was re-examined and re-measured. Type sections of the two formations were measured. The type section of the group was found to include both formations not merely the lower one as previously thought. The Yardie Group consists of "Vlaming Sandstone" above disconformable on "Pilgramunna Formation" below. Interfingering of the "Pilgramunna Formation" and Trealla Limestone was established, thus confirming their contemporaneity. The disconformity between the "Pilgramunna Formation" and the "Vlaming Sandstone" was confirmed in many places.

"Pilgramunna Formation": The Pilgramunna Formation consisting of calcareous coarse and medium-grained quartz sandstone, sandy limestone and reef limestone ranges in thickness from 75 to 90 feet.

"Vlaming Sandstone": The "Vlaming Sandstone" consisting of medium to fine-grained calcareous quartz sandstone varies in thickness depending on the amount removed by erosion. The greatest thickness measured was 100 feet. Greater thicknesses were measured in 1949 south of Yardie Creek.

?QUATERNARY:

Exmouth Sandstone: A type section of the Exmouth Sandstone to replace the tentative type section described previously (Condon, Johnstone and Perry, 1953) was measured on the east flank of Rough Range. A thickness of 125 feet of calcareous medium and fine-grained sandstone was measured, resting unconformably on Trealla Limestone. The similarity in lithology and stratigraphic and structural position suggest the equivalence of the Exmouth Sandstone and the "Vlaming Sandstone" but the age of either of these formations is not known as they contain only foraminifera that range from Pliocene to Recent.

## STRUCTURE

The major and at least some of the minor structural features of the Carnarvon Basin are believed to be controlled by the pre-existing shape of the surface of the basement, modified by down-warping under the load of sediments.

Along the margin of the Basin and around the Precambrian

inliers the relief in the surface of unconformity is about 300 to 400 feet; this is probably the minor relief - the original major relief may have been much greater although it is not possible to separate the original major relief from the subsequent structural relief caused by sagging.

The Precambrian-Palaeozoic contacts, many of which were originally mapped as faults, are considered to be unconformities. In particular, the contact running north from Williambury Homestead, that near Harris Well, Williambury, that at the eastern margin of the Precambrian inlier on Lyons River Station, and that crossing Bush Creek. The contact on the east side of the Carrandibby Precambrian inlier (mapped by geologists of West Australian Petroleum as a fault) is also considered an unconformity. The details of this contact can be seen in several places well exposed; in one place the Permian sediments overlap a terra rossa soil and subsoil developed on the Precambrian schist, in another the relationship is that of abutment unconformity; moreover although regionally this contact is straight, in detail it is extremely irregular with a relief normal to the surface of the contact of about 100 feet (minor) and 1400 feet (major). Where the synclines and anticlines in the Permian sediments meet the contact they conform precisely to valleys and ridges respectively in that contact surface.

All of the contacts listed above are regarded as "abutment unconformities". Along these contacts there was some movement of the sediments during their compaction and on some contacts slumping, but in no case is there detailed structural evidence such as jointing, cleavage or brecciation or mylonitisation of the younger sediments to support the idea (still held by some) that the contacts are tectonic faults. (One of us (M.A.C.) intends to deal with this question more fully in a separate report).

If the structure of the Basin is regarded as dominantly depositional, the results of the reconnaissance gravity survey of the Basin (Chamberlain, Dooley and Vale, 1954) may be taken to indicate the shape of the Precambrian floor of the Basin. The long line of relatively high gravity anomaly from Ajana to Giralia is almost certainly a basement ridge and almost certainly of the high-density gneiss which outcrops at Ajana.

This ridge divides the Carnarvon Basin in two lengthwise. For the western basin, which appears from the Bouger anomaly map to be a single main basin with only minor irregularities, the name "Gascoyne Basin" is proposed. The main ridge may be called the "Ajana-Wandagee Ridge". To the east of the ridge there is a series of basins separated by ridges. For these the following names are proposed:-

"Onslow Basin" open to the north (out to sea) and bounded on the south by the east-west "Yanrey Ridge" at Lat. 22°30'. "Merlinleigh Basin" bounded on the north by "Yanrey Ridge" and on the south by "Carrandibby Ridge" which runs west and north from the south end of the Carrandibby Range. East of this ridge and extending south to outcropping Precambrian north of Yallalong is the "Byro Basin". The southern end of the "Byro Basin" is bounded on the west by the "Yallalong Ridge" at Long. 115°30'. The "Wooramel Strait" crossing the "Ajana-Wooramel Ridge" south of "Carrandibby Ridge" and bounded on the south by "Muggon Ridge" running east from the "Ajana-Wooramel Ridge" at Lat. 26°25' is the main connection between the "Gascoyne Basin" and the "Byro Basin". The "Coolcalalaya Basin" runs south from the "Muggon Ridge", bounded on the west by the "Ajana-Wooramel Ridge" and on the east by the "Yallalong Ridge", to a low indefinite ridge (at Lat.28°15')

which is the northern boundary of the Irwin Basin.

The "Coolcalalaya Basin" is different in form from the Basins of the Carnarvon Basin and similar in form to the Perth Basin and continuous with it. Therefore the "Coolcalalaya Basin" should be considered as the northernmost part of the Perth Basin and then the southern boundary of the Carnarvon Basin may be defined as the Ajana Ridge from the coast 20 miles west of Northampton to 20 miles east of Woodleigh Homestead, the Muggan Ridge from there for 44 miles east and the Yallalong Ridge from there for 60 miles south to where it meets continuous Precambrian basement outcrop.

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# TABLE I.

## STRATIGRAPHY OF THE CARNARVON BASIN, W.A.

| PERIOD | | COASTAL AREA ("GASCOYNE BASIN") | | | EASTERN AREA | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Northern 21° to 24° | Central 24° to 26° | Southern 26° to 28° | "MERLINLEIGH BASIN" Northern | "MERLINLEIGH BASIN" Southern | "BYRO BASIN" Northern | "BYRO BASIN" Central | "BYRO BASIN" Curbur Area | "BYRO BASIN" Southern |
| QUATERNARY | ?Pleistocene or | (Exmouth Ss)?= | (Coastal Lst.) | (Coastal Lst.) | (Joolabroo Fm.) | (Joolabroo Fm.) | (Joolabroo Fm.) | (Joolabroo Fm.) | | |
| TERTIARY | ?Pliocene | (Vlaming Ss.) | | | | | | | | |
| | | ("Pilgramunna Fm."= (Trealla Lst. Tulki Lst. Mandu Calcte. | Trealla Lst. | Trealla Lst. | | | | | | |
| | Oligocene | | | | ("Nadarra Fm.") LATERITIZATION | | ("Nadarra Fm.") LATERITIZATION | | | |
| | | Giralia Calc. Jubilee Calc. | Giralia Calc. | Giralia Calc. | Merlinleigh Ss. | Merlinleigh Ss. | "Pindilya Fm." | "Pindilya Fm." | "Pindilya Fm." | "Pindilya Fm." |
| | | Cashin Calc. Pirie Calc. Wadera Calc. Boongerooda Greensand | | | | | | | | |
| CRETACEOUS | | Miria Marl | | | | | | | | |
| | | Korojon Calc. | Korojon Calc. | Toolonga Calcilutite | Korojon Calc. | Korojon Calc. | ? | | | |
| | | Gearle Siltst. | Gearle Siltst. | Alinga Fm. | Gearle Siltst. | Gearle Siltst. | ? | | | |
| | | Windalia Rad. | Windalia Rad. | Thirindine Fm. | Windalia Rad. | Windalia Rad. | Windalia Rad. | | | Thirindine Fm. |
| | | Muderong Sh. | Muderong Sh. | | Muderong Sh. | Muderong Sh. | ? | | | |
| | | Birdrong | Birdrong | Birdrong | Birdrong | Birdrong | ? | | | ? |
| | | Unnamed Siltst. | | | | | ? | | | ? |
| JURASSIC | | | | | | | | | | |
| TRIASSIC | | | | | | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PERMIAN | Kungurian | | | Binthalya Subgroup | | | | | | |
| | | | | Mungadan Ss. | | | | | | |
| | | | | Coolkilya Gwke. | | | | | | |
| | Artinskian | | | Baker Fm. | | | | | | |
| | | | | Norton Gwke. | | | | | | |
| | | | | Wandagee Fm. | | | | | | |
| | | | | Quinnanie Sh. | | | | | | |
| | | | | Cundlego Fm. | | | | | | |
| | | | | Bulgadoo Sh. | | | "Middle Camp Fm." | | | |
| | | | | Mallens Gwke. | | | "Bogadi Gwke." | | | |
| | | Byro Group* | | | "Madeline Fm." | | "Madeline Fm." | | | |
| | | | | Coyrie Fm. | "Keogh Fm." | | "Keogh Fm." | "Curbur Fm." | | |
| | | | | | | | "One Gum Fm." | ========== | | |
| | | | Wooramel Ss. | Wooramel Ss. | "Monument Fm." | | Wooramel Ss. | | | |
| | | | | ========== | | | ========== | | | |
| | | | Cordalia Gwke. | | | | | | | |
| | | | | ========== | | | | | | |
| | | Callytharra Fm.* | Callytharra Fm. | Callytharra Fm. | Callytharra Fm. | Callytharra Fm. | Callytharra Fm. | | | |
| | | | ========== | | | | "Carrandibby Sh." | | | |
| | Sakmarian | Lyons Group* | Lyons Group Harris Ss. | Lyons Gp. | Lyons Gp. | | Lyons Gp. | Lyons Gp. | Lyons Gp. | |
| | | | ========== | | | | | | | |
| CARBONIFEROUS | Lower | Unnamed Carboniferous* | Yindagindy Fm. | Cly | | | | | | |
| | | | Williambury Fm. | Clw | | | ? | | | |
| | | | Moogooree Lst. | Moogooree Lst. | | | | | | |
| DEVONIAN | Upper | | Willaraddie Fm. | Willaraddie Fm. | | | | | | |
| | | | Mundabia Ss. | Mundabia Ss. | | | | | | |
| | | ? Gneudna Fm.* | Gneudna Fm. | Gneudna Fm. | | | ? | | | |
| | Middle | Nannyarra Gwke. | Nannyarra Gwke. | Nannyarra Gwke. | | | | | | |
| | | | ========== | ========== | | | | | | |
| SILURIAN | | | | | | | | | | |
| ORDOVICIAN | ? | ? ? | (Tumblagooda Ss.) | ? | ? | | ? | ? | ("Badgeradda Beds") | |
| | | | ========== | | | | | | ========== | |
| CAMBRIAN | | | | | | | | | | |
| PRECAMBRIAN | | ? ? | Gneiss | Schist & Granite | Schist & Granite | Schist & Sediments | Schist | Schist | Schist | |

NOTES: ========= Unconformity; ( ) Age not established; * Bore information;

"Congo Fm." New name - not published; ? Sequence possibly present (bore or Geophysical indication).