

THE SHELL COMPANY OF AUSTRALIADALMAYNE - DOUGLAS RIVER MAPPING RESULTS

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ENCLOSURE

1. Geological Map

1:20000

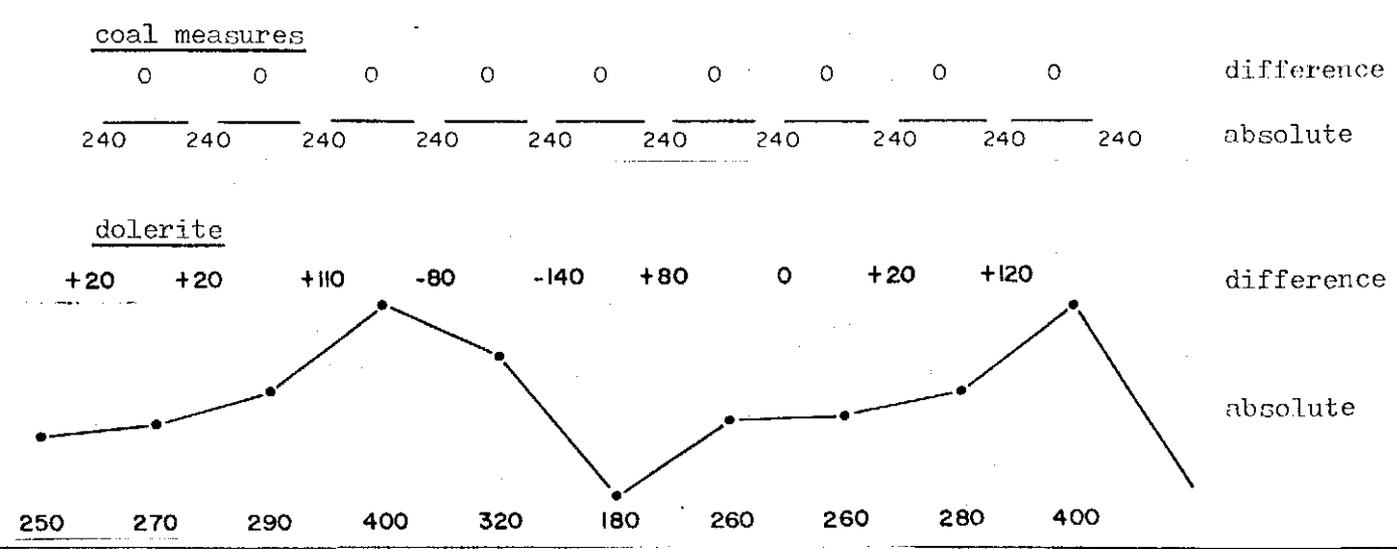
1. AIMS :

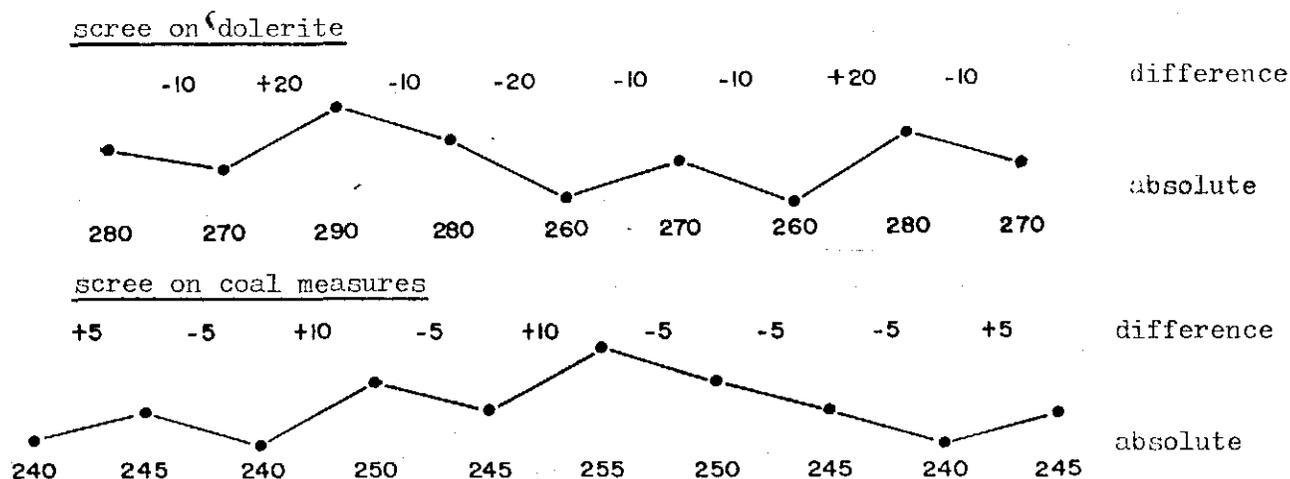
Detailed mapping of the area shown on the accompanying map was carried out in an attempt to delineate areas of Triassic coal measures which had been intersected by drill holes during the 1978/79 drilling programme. In locating the Triassic a great deal of attention was also placed on defining the shape and form of the Jurassic dolerite bodies which form the predominant outcrop in the area. As an extension of defining the areas of Triassic sediments around the drillholes, mapping to the south was carried out to test the potential of the area to the south being coal bearing and in so doing, help in the placement of drill-holes for any future drilling programme.

2. TECHNIQUE :

Results of traverses in the field were plotted directly onto 1:20,000 topographic maps. Aerial photographs were used as an aid, particularly for tracing faults and lineations. An aneroid barometer/altimeter was used to fix specific locations and this has resulted in most boundaries being defined to within $\pm 10m$.

A total field magnetometer was used as an aid in defining dolerite outcrop, coal measure outcrop and dolerite scree overlying dolerite or coal measures. Results with the magnetometer varied markedly with scree covered areas being the most difficult to confidently recognise. Distance between magnetometer station readings was approximately 5m. Some of the typical signatures for the magnetometer readings will be given below but it should be stressed that it is not the absolute values that are important but rather the difference between consecutive readings. When using the magnetometer the latitude correction should be adjusted so that the majority of readings fall mid-scale on a relatively sensitive scale i.e. 3K scale. Typical signatures are :-





When recording values in the field it is best to plot the values as you proceed or book the values and the corresponding difference.

Actual traverses, both magnetometer and geology are shown on the accompanying factual map.

3. RESULTS :

Lithologies will be described in stratigraphic order.

3.1 Silurian Mathinna Group

Mathinna Group rocks are exposed at Piccaninny Point, Long Point and in the hills to the north of Piccaninny Creek. Outcrop is excellent in creek beds and on the rock platforms at the points mentioned above. The Mathinna is predominantly composed of intensely folded quartzites, slates, phyllite, mudstone, schist. Quartz veining is common and all lithologies recognised in the field have these characteristic quartz veins present. Quartzite forms the best outcrops as these are very hard and erosion resistant. In most areas (particularly Elephant Pass) the Mathinna form steep sided hills with open vegetation. Scree cover is usually in the form of angular blocks approximately 10 cm. square. Beds within the Mathinna dip at high angles usually between 70° and vertical. Extremely tight folds can often be observed, with the fold axes being aligned in a N.W. - S.E. direction. Much of the Mathinna mapped is fault bounded and major faults have been recognised within the Mathinna.

3.2 Devonian

The Devonian is represented by a granite/granodiorite which has intruded the Mathinna. The granodiorite is confined to the low coastal areas at Piccaninny

Point, Long Point and in the lower reaches of Piccaninny and Wardlaws Creeks. Several phases of the granite are present with pegmatitic and aplitic phases being common near the contact with the Mathinna. The granodiorite outcrops as low rounded hills covered with coarse quartz gravel.

3.3 Permian

The Permian unconformably overlies the Mathinna. An excellent section of the Permian can be seen in the northern tributary of Piccaninny Creek. The Permian appears to be approximately 110m thick in this particular area. Elephant Pass also has excellent exposures of the Permian but these have not been examined in detail. The base of the Permian is marked by a pebble conglomerate at the base of a quartzose sandstone which is fine to medium grained and moderately well sorted. This sandstone interval is approximately 30-40m thick and grades into a silty section at the top. The siltstones and sandstones are relatively thin (10-15m) and contain a few marine fossils. Above this sandstone section is a 40-50m interval of limestone and mudstone which is abundantly fossiliferous. The mudstones have been calcified and silicified and together with the limestone form good outcrops. Spirifer and other marine fossils are abundant and in the limestone often show as white calcareous casts. Above the limestone is a siltstone/mudstone which is approximately 10m thick and is difficult to distinguish from the disconformably overlying Triassic sediments.

The Permian is flat lying and shows only slight local variation in dip. Outcrops of Permian are usually confined to the coarse, quartzose grits at the base of the Permian or to the fossiliferous limestones.

3.4 Triassic

The Triassic disconformably overlies the Permian and appears to be in the order of 280-300m thick as indicated by outcrop. Outcrop of the Triassic is poor and is usually covered by dolerite scree. Outcrops observed are usually small in extent with the best exposures being on the TPFH E Road and along the Douglas River. The Triassic is dominantly composed of lithic, medium grained sandstone which is light brown when weathered and light grey when fresh. Accurate stratigraphic description of the Triassic is not possible on the exposures located and therefore will not be attempted. Variation in the grain size of lithic sandstone does occur, the coarsest sandstone being found in the coastal creeks near Long Point. Inter-bedded sections of shale, siltstone, mudstone, carbonaceous shale, coal and sandstone have been located in the Douglas River. The coal outcrops have

been confined to the Douglas River and to the TPFH E Road. The coal outcrops have been numbered on the accompanying map and brief descriptions of each outcrop are given below. Detailed logging of the coal exposures was not attempted as all outcrops are highly weathered.

- 1. full section not exposed - approximately 1m of banded mudstone, carbonaceous shale and coal - coal bands 5cm thick - badly weathered - coal dull - lithic sandstone at base of section.
- 2. coal seam approximately 1.4m thick - badly weathered - dull coal with few bright bands - lithic sandstones above and below.
- 3. dull coal seam, 30cm thick - badly weathered - overlain by thin clay band and lithic sandstone - below seam, mudstone and lithic sandstone.
- 4. fault bounded wedge of steeply dipping coal and carbonaceous shale - coal dull.
- 5. one metre section of coal, shale and carbonaceous shale.

coal))	
shale))	
))	dull
coal))	
))	1m.
shale & carbonaceous shale))	

- 6. eight feet of dull coal - 6 inch shale band 3.5 feet from top of seam - shale floor and lithic sandstone roof - shows varying thickness - appears to thin slightly to the north west - dips approximately 10° to north west.
- 7. dull coal seam - full section not visible - 6 inch shale band 3.5 feet from sandstone roof - appears to be the same seam as at (6.)
- 8. badly weathered section of banded coal, shale, carbonaceous shale and mudstone - section approximately 8 feet thick.

In the area to the south and west of Bedggood Hill lithic sandstone outcrop extensively. The Triassic section in this area appears to have been thickened by faulting as over 500m of Triassic can be traced. In a gravel pit to the east of Nichols Gap mudstones and siltstones have been exposed. Conglomerate bands have been noted in several localities, these being shown on the accompanying map.

3.5 Jurassic

Jurassic dolerite outcrop is extensive within the area. The dolerite forms resistant cappings overlying and intruding the Triassic. In the Thompsons Marsh area the dolerite is sheet like and appears to have intruded the Triassic at a constant level. The thickness of the dolerite varies as a result of faulting which has downthrown a block to the west of the marsh. Several dolerite pipes have been located and these are shown on the map. It is felt that many more pipe-like structures also exist but cannot be detected with the mapping tools currently being used. Bedgood Hill, Nichols Gap and Lookout Hill appear to be major feeders and in these areas the dolerite occurs at abnormally low levels. The overall form of the dolerite is extremely complex but is very important in its relationship to the underlying Triassic.

The dolerite is generally fine grained and very hard and shows coarsening in the areas of the above mentioned feeders and pipes.

3.6 Tertiary

The Tertiary is represented by dolerite talus, river alluvium and coastal deposits. Dolerite talus is extensive in its distribution and covers most of the Triassic. It is only where youthful rivers and creeks cut through the scree that the underlying rocks are exposed. The scree is variable in thickness and size of blocks which comprise the scree. Scree blocks up to 30m across have been observed.

Tertiary sediments are well developed in Wardlaws Creek and the Douglas River, these sediments usually being confined in extent to the lower reaches of the rivers. Beach sands are present along the coast.

3.7 Structure

Several major faults dissect the area into a number of blocks. Major faults trend north, south and E.N.E. - W.S.W.

A major structural zone divides the area and runs from Piccininny Point, North of Bedgood Hill to the Douglas River. There is one major fault with a number of en echelon sympathetic faults. The exact displacement across the fault is not known but is probably in the order of 150-200m.

To the north of the above mentioned fault, faulting trends more north-south.

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A major fault runs through Thompsons Marsh, the throw on this fault being approximately 120m to the west. Movement along the fault has been dislocated into an east west movement immediately to the south of GY1. Even though the movement has become E.W. the N.S. trend can still be seen on air photos. The northerly extension of the fault through Thompsons Marsh has not been traced and needs to be done in future mapping.

A north south fault with a down throw of approximately 80-100m to the west has brought the Permian and Mathinna into contact in the Piccinny Creek area.

Numerous faults have been located in the Douglas River, many of these being relatively minor in extent. Around Nichols Cap and Lookout Hill several faults have been interpreted from aerial photographs. Faulting must be abundant in the Douglas River area as the Triassic to the north of the river has been markedly thickened. Faulting within the Triassic is difficult to recognise due to the formations being soft.

4. CONCLUSIONS :

North of the fault running from Piccaninny Point to Bedgood Hill the Triassic appears to have been relatively undisturbed. The faulting in the Thompsons Marsh area has down-thrown the Triassic to the west. The base of the Triassic appears to be at approximately 200m ASL in this area.

Triassic is exposed in the Douglas River area. There are several distinct blocks. The block at the base of Bedgood Hill is fault bounded to the west and north and extends eastward to Long Point. This area has been relatively well tested by the Seymour Drillholes.

To the west of Nichols Cap and Lookout Hill there appears to be another fault bounded block of Triassic which has been untested as yet.

South of the Douglas River the Triassic has been traced in Coal Creek and indications of an extension of the Triassic to the south have been noted.

5. FUTURE MAPPING :

Completion of mapping in the Wardlaws Creek-Elephant Pass area can be completed quickly as access is good and exposure excellent. Work should commence immediately to the north of the Dalmayne Mine - good Triassic exposures have been

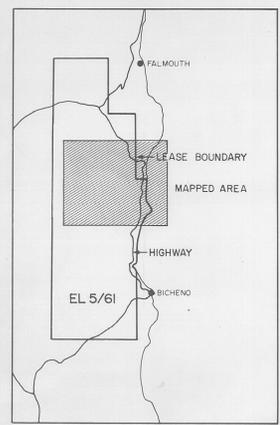
noted in this area. Faulting must be present to account for the difference in level of the base of the Permian to the north and south of Wardlaws Creek.

Mapping of the faults which is thought to exist between GY2 and GY4 will be best picked up by gravity meter traverses.

Mapping to the south of the Douglas River is most important before any future drilling programme is contemplated as it is this area which would appear to hold the best potential. Field parties will probably need to camp in the area for a few days at a time as access is non-existent in this area.



LOCALITY PLAN



LEGEND

- Geological boundary
- - - Geological boundary position approximate
- Fault, position known
- - - Fault, position known, limits unknown
- - - Fault, inferred
- - - Dolerite boundary, transgressive
- - - Field traverse line showing G (Geology) and M (Magnetometer) interpretation

QUATERNARY	qd	Alluvium
	qf	Dolerite talus on sediments
JURASSIC	jd	Dolerite
TRIASSIC	i	Undifferentiated
PERMIAN	p	Undifferentiated
DEVONIAN	dg	Granite
SILURIAN	s	Slates, phyllites, schists, quartzites

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THE SHELL COMPANY OF AUSTRALIA LTD.
 N.E. TASMANIA
 SHELL-IMI EL 5/61 GRAY
 GEOLOGICAL MAP
 Scale 1:20,000
 Author: J.K. Ivett Date: Feb. 79
 Report No: CEPR 10/79 Drawing No: C-1432 Encl. 1