

COORABIN COALFIELDNOT TO BE REMOVED
FROM LIBRARYSUMMARY OF RESULTS OF GEOLOGICAL SURVEY OF COORABIN AREAGENERAL GEOLOGY:

Car traverses were made in several directions over an area of 30 miles square with Coorabin as a centre, with the object of delimiting, if possible, the margins of the coal basin.

Extending south from Coorabin is an area, 10 miles long by 5 miles wide, of undulating country rising to a maximum height of just over 100 feet above the level of the surrounding plains. The surface is covered by a thick mantle of brown sandy soil and no rock outcrops were seen.

The nearest rock exposures are located east of Daysdale and 14 miles south-south-east from Coorabin, where granite, schist and quartzite form a belt of hilly country extending north-south for several miles.

At the north-western bulge of Lake Urana, 16 miles north-north west from Coorabin, hard quartz-veined conglomerate (Ordovician?) outcrops, and is overlain to the south by flat-bedded conglomerate, sandstones, and resistant claystone. Beneath these at the south-western corner of the lake are carbonaceous shales, probably of Permian age.

To the east of Urana, and 13 miles north-north-east from Coorabin is a belt of undulating country consisting of Tertiary conglomerate, sandstone, etc. overlying granite, phyllite and chloritic schist at a shallow depth.

Mr. Harper, of the New South Wales Geological Survey has recorded an outcrop of granite 23 miles south-south-east from Coorabin, this being the most easterly of a number of such exposures extending south-east from Berrigan.

POSSIBLE EXTENSION OF COAL MEASURES BEYOND COORABIN:

Local rumour claims that coal was struck in three bores east of Urana. Examination of sludge heaps at two of these revealed that phyllite and chloritic schist were entered at comparatively shallow depths and the absence of coal was established.

Two bores between Daysdale and Savernake are said to have passed through lignite. The survey of bore logs being conducted by the Geological Survey of New South Wales will yield more exact information, as many of the bores in the area, including the above two, were put down by the Water Conservation and Irrigation Commission.

The distribution of outcrops of basement rock suggests that the coal basin does not extend south beyond Savernake, nor east beyond Daysdale. To the north-west and west there are no outcrops for very many miles.

COORABIN AREA:(a) General:

Bores and shafts sunk in the Coorabin area have shown that the Permian coal seam, or lignite equivalent of the coal seam, is overlain directly by Tertiary sandstones and clays, or is separated from the latter by a variable thickness of Permian mudstone. At the base of the Tertiaries, over at least a large part of the area, is a coarse sand and pebble bed, met in Lane's shaft, Bore A, Carbery shaft and Por.27 shaft. Whether this bed persists to Coorabin No. 2 shaft and Clear Hills shaft, is not known, but it appears to be lacking in the Gunambill shaft.

At Lane's shaft and Bore A, the pebble bed rests on the coal or lignite. In the Carbery shaft black shale lies on top of the coal but the thickness is uncertain. In the Gunambil shaft several feet of mudstone overlies the top seam.

(b) Limits of Commercial Coal:

As pointed out in previous reports, thinning of the coal seam to 7 feet at Clear Hills shaft and further thinning north and west suggests approach to the margin. At Gunambil shaft and No. 3 bore the coal is 8 feet thick (at Gunambil split by bands) and in a bore a mile further north is reported to be only 6 inches thick, indicative of approach to the margin. In Bore A, 34 chains east of Lane's shaft, the coal has thinned to 7 ft. 6 inches with bands. A limit to commercial coal about 100 chains or so east from No.4 Bore is suggested by the rapid shallowing of the seam from No.5 to No.4 bore. Actual limits can be determined only by test boring.

(c) Structure in Coorabin Area:

An east-west section through Bore A - Clear Hills shaft shows coal or lignite at RL 273 feet on the eastern margin, coal at RL260 feet in the region of the No.2 shaft, and atRL290(?) feet on the western margin.

A north-south section shows coal at RL 272 feet at Gunambil shaft, atRL260 feet at Coorabin shaft, and falling to RL-121 feet at No.5 bore. To the north of Gunambil shaft the coal level falls again to No.3 bore.

The coal seam either arches or undulates between Lane's shaft and Bore A, and between Lane's shaft and Gunambil shaft. In Lane's shaft workings, the coal seam undulates slightly but rises on the average at about 1°40' to the east-north-east.

The evidence suggests that the coal occurs in a basin pitching south-south-west from Coorabin, the contours of which have been modified by later folding.

OAKLANDS AREA:

In the vicinity of Coorabin a structurally high area of coal underlies a topographically high area.

At Oaklands and extending south for four miles is another and more extensive topographic high separated from the Coorabin high by South Creek along the No.4-No.5 Bore line. The possibility of the occurrence of coal at shallow depths in the Oaklands area has to be considered.

Several bores have been put down for water, the deepest to RL 173 feet from RL 488 feet, without striking coal. Two bores within the 500 foot contour line, half-a-mile and one mile south from Oaklands went to RL255 feet without striking coal.

The available evidence on the distribution of fresh and brackish water around Oaklands township, suggests that the Tertiaries here have a southerly dip carrying the zone of brackish water met north of the town to a position under the fresh water zone of the town area. The coal seam, on this evidence, would lie several hundred feet below Oaklands.

The area within the 450 ft. contour extends for three miles further south, and no evidence on underground structure was available for this section.

UNDERGROUND WATER:

(a) General:

Information gathered on the field concerning water bores in the area, shows that underground water is confined within sand drifts and pebble beds and is nowhere found above RL 290 feet. When the aquifers are tapped water rises to an RL of about 280 feet. This applies to fresh and brackish water in both Tertiary and Permian beds, and in the topographic highs or on the plains.

This information is in many cases approximate only. The detailed study of bore logs by the Geological Survey of New South Wales will yield more accurate information on aquifers, static level and water analyses and may throw light on the disposition of the intake areas.

(b) Coorabin Area:

In Bore A three aquifers were tapped:-

- (1) 3 feet of sand and pebbles at RL 275 feet.
- (2) 5 feet of fine sand at RL 238 feet.
- (3) 2 feet of sand at RL 224 feet.

Water from all three aquifers was brackish and in each case rose to RL 283 feet.

The existence of a static level at RL 283 feet is confirmed by the available information on water encountered in the other shafts in the coalfield.

The reason for the absence of any serious water problem above the coal at Lane's shaft, lies in the fact that, although the basal Tertiary quifer rests immediately on top of the coal, the water has a static head of only 2 feet. At Clear Hills shaft the coal lies above RL 283 feet, and at Gunambil shaft this level is in Permian mudstone above the coal, explaining the absence of water from both shafts. At Coorabin No.2 shaft water was encountered in an aquifer at RL 283 feet, but apparently impervious beds separated this aquifer from the coal.

Little information on water at the Carbery shaft has been recorded; except that water was met at RL 283 feet, and that at 4 feet above the coal, (?) the inflow had increased to 50,000 gallons per hour. It seems that a second aquifer lies only four feet above the coal(?).

Two water-bearing horizons were proved below the coal section in Bore A, the upper one only 34 feet below the top aquifer. This second aquifer was tapped below the coal in Lane's shaft, and 6 feet below the coal in Gunambil shaft. In Coorabin No.2 shaft, 38 feet of mudstone separated the aquifer from the bottom of the coal.

BEARING OF WATER ON RESERVES OF EXTRACTABLE COAL:

Water above the coal north and east of Lane's shaft is not likely to be a serious problem, but will set an upper limit to extractable coal. A lower limit will probably be set by the second aquifer, the depth of which is uncertain but small.

West from Lane's shaft water conditions in relation to the coal are unknown. The aquifer above the coal will presumably become a more serious factor as the head of water increases down the dip. At No.2 shaft the lower aquifer is 38 feet below the bottom of the coal, but how far this condition will extend to the east cannot be gauged.

At Carbery shaft the position of the aquifers in relation to the coal seam is not known.

Further south, and deeper in the basin, at No.5 bore, a considerable thickness of Permian mudstone, shale and sandstone, overlies the coal, and there is a possibility that these may be lacking in aquifers.

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