Rept Bk. No. 30-20
D.M. 364/51

DEPARTMENT OF MINES
SOUTH AUSTRALIA

REVIEW OF BROWN COAL OCCURRENCES ON EYRE PENINSULA.

Table of Contents

Introductory

Brown coal has been reported in the past from a number of localities on Eyre Peninsula. having been discovered chiefly during water boring. A few of the more promising areas have been investigated further by boring and samples analysed.

Existing information and prospects of the various deposits as a possible source of fuel are summarised in this report.

General Statement.

Eyre Peninsula comprises portion of the pre-Cambrian shiled of the western part of Australia, which has remained a stable mass for a very long period of geological time, During Early Tertiary times, shallow fresh-water sediments, including lignites, were deposited over a widespread area in depressions formed in the pre-Cambrian bedrock, of which the most deep and extensive is that now defined by the Nullabor Plain. In the western area, Marine conditions prevailed in the Miocene period.

East of the Nullabor Plain, extending as far as Port Lincoln, the Early Tertiary lignitic beds are restricted to small and isolated depressions in which lacustine conditions continued into the Late Tertiary period.

These brown coal deposits were almost certainly formed contemporaneously with the deposits elsewhere in the southern portion of Australia, as for example those of the Murray Basin (Moorlands) and La Trobe Valley (Yallourn, Victoria). Confirmatory evidence of such a relationship is supplied by determinations of fossil pollen and spores by Miss K.M. Pike (1948-1949) which revealed characteristics in micro-fossil flora common to several of these occurrences and to the Moorlands and Yallourn brown coals.

Summary of Coal Prospects

The majority of the brown coal deposits on Eyre Peninsula are situated at too great a distance from areas of possible

consumption to be considered as a source of fuel.

From an economic viewpoint, the most promising occurrence at the present time appears to be that in the vicinity of Wanilla Railway Siding, being strategically placed as regards urilization. Exploratory boring of low-lying areas avoided during water boring in the district is recommended while a plant is still in the district.

Another area which has some features to commend further interest is the Seven Mile Swamps, situated 35 miles north west of the rail terminus at Penong and less than 100 miles west of growing industries at Thevanard. Ligneous sediments are known to be present in the bed of the swamp at a depth of 2 feet. Boring at this locality would only be warranted when a plant is in the district.

References

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Nullabor Plains Basin.

A generalised succession of the strata present in the Nullabor Plains Basin, as revealed by bores in the South Australian Section, is as follows:-

Range in Thickness (feet)	
10-80	Hard coarse crystalline limestone with abundant fossil shells - Middle Miocene
140-500	Soft white chalky polyzoal limestone with flints - Lower Miocene (?)
500-880	Light blue and grey clay quartz gravel and sand, carbonaceous sand and clay with lignite - Oligocene (?)

Pre-Cambrian bedrock has been met at depths between 350-1387 feet.

The greatest known thickness of the lignitic beds is 880 feet, in the Government No. 8 bores, where the carbonaceous sediments recur at intervals interbedded with clays etc. Some reports have suggested that the lowest horizons are of Cretaceous age but the authenticity of these records is questionable according to

Dr. L.K. Ward (vide Whitehouse, 1926)

Bores shown on the locality plan (Nos. 1,2, 3) are only a few of the many sunk in the basin but the logs of these (See Table 1) May be regarded as typical of the area generally

+The deposits have no commercial value for many reasons, the chief being the enormous thickness of overburden and their great distance from industrial areas

Shallow Coal Marginal to the Nullabor Plain.

In this section, brown coal occurrences in the beds of lagoons marginal to the Nullabor Plain are discussed. These deposits are near the surface due to the shelving out of the Tertiary sediments of the Nullabor Basin against bedrock, and in each case, they are overlain stratigraphically by a thin bed of fossiliferous Miocene limestone. The latter has been removed by erosion in the vicinity of the lagoonal depressions and overburden amounts to only a few feet.

The deposits are no doubt very extensive, and if it were not for their far-distant situation, they would provide a useful source of brown coal.

Pidinga (No 5 on Locality Plan) - The earliest reference to the occurrence of lignite at Pidinga was made by H.Y.L. Brown in the year 1885. Brown reports that a trial bore sunk in the lagoon by a Mr. Ifould showed the following result: 0-30 Lignite; 30-39 grey clay and ironstone; 39-40 lignite.

Further recent exploratory work has revealed than area of approximately 1 square mile (see plan No. S422) is underlain at shallow depth by a bed of low grade lignite; ligneous clay and sand. Actual coal was found within 3 feet of the surface. A borehole sunk by the Department of Mines, in 1948 to test the thickness of the coal and obtain samples for analysis penetrated 45 feet of carbonaceous material above grey clay. The bore was not continued to bedrock. Analyses of various horizons shown in Table II disclosed that even the most promising portions of the lignite were very high in ash.

Samples from the exploratory borehole were sent to the C.S.IRO Pollen Research Laboratory at the Melbourne University and the

following observations were made by Miss K.M. Pike (1949) "The clay shows a rich assemblage of pollen and spores representing the families Proteacea Myrtacea, Epacridaceae, Fagaceae, together with other Gymnosperms and fern spores. A comparison made with preparations of Moorlands brown coal revealed that many of the pollen and spore types were present in both coals, except that Myrtacea appear to be absent from the Moorlands coal. There is thus a suggestion that the Pidinga deposit might be of the same general age as Moorlands" The age of the beds as indicated by pollen and spore determinations is supported by stratigraphic considerations, the lignite occurring below Middle Miocene fossiliferous limestone.

Lake Tallacootra (No 6 on Locality Plan) - The extent of this occurrence is little known but is probably similar to Pidinga A sample of brown coal from the lagoon was submitted to the Mines Department for analysis by Mr. T. Butler of Coorabie (1933), and the result is shown in Table II The low figure for incombustile material is notworthy but it should be understood that the sample was almost certainyl selected lignite rather than representative of the ligneous beds generally.

Seven Mile Swamps. (No. 7 on Locality Plan) Other lagoons known as the Seven Mile Swamps situated on the property of Mrs. L.D. Nieass, at a distance of approximately 35 miles north west of Penong, have been found to be underlain by carbonaceous clays. A trial hole sunk at the base of a limestone (Middle Miocene) cliff at the western end of the chain of depressions showed lignitic clay at 2 feet from the surfac.e The material was not examined beyond a depth of 5 feet. Further exploration of this occurrence would most certainly be warranted in the event of a plant operating in this district - as for example if sites for water boring selected on Mrs. Nieass' property are drilled at a future date.

Brown coal from this area may well be considered as a possible source of fuel for growing industries at Thevenard - particularly for plaster of paris manufacture situated less than 100 miles to the east .

Nicol Bore (Fowlers Bay District)

This bore (No. 8 on Locality Plan) situated 10 miles north of west from Fowlers Bay township, was sunk for water. The driller reported the presence of 40 feet of carbonaceous sediments at a depth of 380 feet, the overlying strata being Middle Miocene Calcareous sandstones and thick coverage of Pleistocene aeolianite sands.

This district may be regarded as a marginal portion of the Nullabor Basin but the marine Miocene beds are considerably thicker than those developed along the fringe of the basin further to the north.

There does not appear to be any likelihood of useful brown coal deposits in this area.

Local Occurrences in the Penong-Streaky Bay Area.

Local occurrences of carbonaceous sediments have been reported from water bores in the pastoral country between Penong and Streaky Bay. They are probably localised in extent and are of no interest commercially.

Lake MacDonnell Bore (No. 10 on Locality Plan) - A bore sunk in Lake MacDonnell showed lignitic sediments between 149 and 238½ feet. The overburden comprised 30 feet of estuarine Miocene shelly sand, 8½ feet of Lower Pliocene (?) limestone, Pleistocene aeolianite and Recent lake deposits. The bore is of interest stratigraphically, showing the only observed occurrence of marine Miocene strata in the extensive portion of Eyre Peninsula east of the Nullabor Plain and West of Cowell.

The Lake MacDonnell brown coal (Pike 1948) was found to be rich in pollen grains of the families Proteaceae and Fagaceae (of the genus Nothofagus), and a variety of spores. Miss Pike concludes; "The general character of the flora represented by micro fossils in the Lake Macdonnell material bears some resemblance to that of the Yallourn and Moorlands brown coals".

Section 33, Hundred of Catt. (No. 9 on locality Plan -) A bore sunk by the Mines Department bottomed on brown lignitic clay at a depth

of 154½ feet. Many other bores to bedrock in the vicinity have not revealed carbonaceous sediments and, in this instance, the deposit no doubt occupies a depression of limited extent in the bedrock. Property is held by A.J. Oats.

Block 2, County Dufferin (No 11 on locality plan). This bore was sunk by the Mines Department for Mr. J.A. McInnis. Carbonaceous sands and clays were encountered between 70 and 104 feet.

Malbooma (Mulgathing Station).

Brown coal has been reported in a number of water bores sunk on Mulgathing Station, near Malbooma, a siding on the Transcontinental railway distant 280 miles west of Port Augusta.

Ward (1939) investigated the occurrence and reports "The selection of these boresites in seatrch of water has been governed by the presence of shallow depressions, which are elongated in form and mark the position of chains of swamps, mow superficially dr except immediately after heavy falls of rain, but which were probably more continuously wet when the rainfall was more abundant (in late Tertiary time) The growth of the vegetation that has given rise to the brown coal was evidently dependent upon these former wetter climatic conditions".

A sample of clayey brown coal from one of the boreholes(No 15 on locality plan) was analysed and showed a very high ash content. Better quality brown coal is said to have been present and burned by the driller when sharpening his tools.

A plan showing bores which intersected brown coal and others in which no coal was reported accompanies this report (Plan No. S 421)

The occurrence is to be tested hsortly by the Mines Department while a plant is in this locality. The bore will be situated on Warrior East Paddock, Mulgathing Station, north of the 354 mile siding.

Wanilla Soldier Settlement Area.

Lignitic sediments have been intersected in certain of a large number of water bores sunk by the Mines Department during the past few years on Soldier Settlement blocks near Wanilla Railway Siding; situated approx. 20 miles North west of Pt. Lincoln.

A plan of the area submitted with this report (Plan No 51-65) illustrates the distribution of bores intersecting lignitic material as well as others in which negative results were obtained. Details of bores in which carbonaceous sediments were reported are shown in Table I.

Tertiary sediments in this area are superimposed upon pre-Cambrian bedrock and form a typically lacustrine sequence. The lignitic horizon is the lowest bed and is overlain by clays, siliceous sands and grits etc.., which show considerable variation laterally, typical of shallow water deposition.

Several favourable features of this occurrence outlined below appear sufficient to warrant further investigation of the area with a view to exploratory drilling for brown coal.

In the first place, the area is within short distance of Port Lincoln and thus strategically placed as regards a possible point of consumption.

Secondly, bores sunk in the area have been selected on sites considered suitable for ground water supplies and have avoided tho se areas which may be regarded as offering best coal prospects, viz saline swamps. Such swamps which are most extensive in the western portion of the district, probably define depressions in the pre-Cambrian bedrock wherein the thicknest carbonaceous accumulat-ions would be expected to accumulate. It can be said, therefore, that bores sunk to date have not been satisfactory as a guide to the presence of coal seams but have only suggested that useful coal may exist in favourable areas.

Thirdly overburden is not great the average figure being of the order of 60-70 feet. In one bore (No 32 on locality plan) overbudeb was found to be only 32 feet.

Mines Department plant is still operating in this district and it is suggested that a trial borehole should be sunk on a site in the swampy depressions to test these areas and to obtain samples for analysis

Outcropping Coal at Coffin Bay.

Carbonaceous matter reputed to be of Tertiary age outcrop

at Point Sir Isaac, on Coffin Bay, hundred of Lake Wangar. The deposit is little known but is apparently a low grade seam present in coastal cliffs. The thickness is said to be of the order of 2 or 3 miles. The area is inacessible to road traffic.

Local Occurrences in the Cummins-Warramboo Area.

Low grade lignitic material of apparently no commercial value was intersected in a number of widely spread bores near the railway line between Cummins and Warramboo. Details of the bores are listed in Table I.

Cummins Area - An old Government bore on section 16, hundred of Cummins (No 12 on locality plan,) was reported by Wade (1915) to show lignitic horizons at depths from 87 to 275 feet. A more recent discovery was in a drainage bore at the Cummins school residenct (No 13) sunk by the Mines Department in 1926, which bottomed on lignitic brown sand between 115 and 128 feet.

Coomaba Bore (No 29 on locality Plan) - Situated a few miles north of Yeelanna on Section 36 (?) hundred of Shannon. Ligneous clay and sand was penetrated from 43 to 100 feet. Granite bedrock was cut at 252 feet.

Musgrave Bore - (No 30 on locality Plan) - Situated south of Warramboo, on section 3, hundred of Ulyerra. Ligneous clay and sand occurred from 95 to 225 feet and granite bedrock at 326 feet.

9-3-1951 D. King

DK:MGB Assistant Geologist

TABLE I

DETAILS OF REPORTED LIGNITE OR LIGNITIC CLAY OCCURRENCES

EYRE PENINSULA

Serial No	Locality Details	Bore details (feet)	Thickness of carbonaceous Horizon (feet)	Overburden (feet)	Water Cut (feet)
1	Reid No. 4 Bore Commonwealth Railways Nullabor Plain	0-20 white limestone; 20-70 ironstained limestone; 70-430, lime- 430-440 calcareous shale and clay; 440-445 dark sand 445-450 carbonaceous shale.	5 plus	445	?
2	Govt. Bore No. 6 Nullabor Plain 23 miles NNE of the Head of the Bight.	0-6 soil and travertine limestone; 6-15 crystalline limestone 15-344, soft white polyzoal limestone; 344-653, carbonaceous clay with lignite, gravels and white pipe clay; 653-798, purple, red and grey shales; 798-1000 hard siliceous and ferruginous sandstones.	309	344	230 450 577 588
3	Robert's Well Nullabor Plain	0-120 grey crystalline shelly limestone; 120-414 polyzoal limestone; 414-749 lignitic clay; 749-758 lignitic sand; 758-777 sand and gravel.	344	414	189 749 777
4	Bore at 400 miles, 29 chains West of Barton Commonwealth Railways	0-9 Limestone; 9-135 red indinated sands etc; 135-178 brown and black lignitc (?) clay; 178-270 gritty kaolin clay; 270-300 granite.	47	135	270
5	Pidinga	Shallow occurrence in bed of a swamp - bore showed 40 ft of carbonaceous clays. Not tried deeper.	40 plus	1-5	-
6	Tallacootra	Shallow occurrence in bed of a swamp	5 plus	1-5	-
7	Chundie Swamps	Shallow occurrence in bed of a swamp	5 plus	1-3	-
8	Nicol Bore Section 18 Hd. Wookata Co. Hopetoun.	0-250 aeolianite; 250-345 calcareous sandstone and soft lime-stone; 345-394 grey and yellow sand; 380-420 lignitic sand and clay; 420-509 white, blue and brown clay; 50-9524 granite	40	380	268

Serial No	Locality Details	Bore Details (feet)	Thickness of Carbonaceous Horizon (ft.)	Overburden (feet)	Water Cut (feet)
(9	A.J. Oats Bore 1 Sect 33. Hd. Catt, Co. Kintore	0-12½, limestone rubble; 12½-86½ red and yellow sand and gravel, 86½-95½ white clay; 95½-113 yellow sandstone; 113-131½ soft micaceous sandstone; 131½-154½ chocolate sand bearing mica. 154½-156 brown lignitic clay.	1½plus	154½	154½
10	Lake Macdonnell Bore Hd. Kevin Co Kintore	0-26½ salt, mud and crystalline gypsum, 26½-110 fossiliferous fine-grained friable limestone; 110-118½ white and grey friable fossiliferous limestone; 118-149 yellow sand and grit with shells; 149-238½ clay, sand, lignitic clay and pyrites 238½-293 decomposed gneiss.	89½	149	
11	J.A. McInnis Bore 1 Block 2 Co. Dufferin	0-2 soil; 2-5 travertine limestone; 5-70 red brown, white and grey sand; 70-104 carbonaceous sand, yellow sand and carbonaceous clay; 104-110 cream-coloured sandy clay; 110-177 white sand.	34	70	54
12	Govt. Bore Sect. 16 Hd. Cumming Co Flinders	0-10 sandy loam; 10-87 sandy and clay; 87-100 black clayey sand; 100-117 sand and clay; 117-149 black clay; 149-192 clay and sand; 192-206 dark clay and lignite; 206-445 clay, sand and gravel; 445-951½ granite.	14 (Main Horizon)	192	46 360
13	Cummins School Residence Cummins Township. Hd. Cummins Co. Flinders	0-8 yellow clay and travertine limestone; 8-42 brown and red clay 42-48 yellow slightly clayey sand; 48-115 vari-coloured sands; 115-128 lignitic brown sand.	13 plus	115	-
14	Bore 15 S.P. Western boundary of Warrior West paddock Mulgathing Stn.	0-31 no record; 31-32 brown coal and clay; 32-50 plastic clay; with coal seams; 50-60 blue clay and sand; 60-70 blue clay; 70-72 blue clay with grit and silicified wood; 72-85 no record	19	31	60

Serial No	Locality Details	Bore Details (feet)	Thickness of carbonaceous Horizon (feet)	Overburden (feet)	Water Cut (feet)
15	Bore S. 30 6 miles west of Malbooma Mulgathing Stn.	0-5 Surface soil; 5-15 limestone rubble; 15-30 sandstone; 30-63 very fine sand; 63-120 brown coal; 120-128 grey clay; 128-130 white sandstone.	57	63	
16	Malbboma West Bore Mulgathing Station	Coal reported at unknown depth	?	?	
17	Bore S27 Aristachus Paddock Mulgathing Station	0-72 no record; 72-78 brown clay; 78½-133½ brown clay with pyrites and lignites: 133½-175½ no record.	55	78	
18	Bore 1 B1 Wanilla Soldier Settlement Sec. 80 Hd. Mortlock Co. Flinders	0-1½ brown sand and laterite; 1½-9 red and grey clayey laterite 9-14 red sand and clay; 14-27 yellow and red sand; 27-32 fine yellow sand; 32-38 grey sand and carbonaceous material; 38-44 light grey and dark brown clay.	6	32	40 32
19	Bore 15 A2 Wanilla Soldier Settlement Sec 79, Hd. Mortlock Co Flinders	0-5 yellow-grey sandy clay; 5-46 grey and yellow sand; 46-50 grey clay; 50-55 lignitic clay; 55-70 quartz grit.	5	50	24 55
20	Bore 18 B Wanilla Soldier Settlement Block 5A Hd. Wanilla Co Flinders	0-1½ soil; 1½-15 brown clay and laterite; 15-50 coloured clays and grit; 50-62 dark brown sand with traces of lignite; 62-65 pale brown sand with traces of lignite.	5 plus	60	26 53

Serial No	Locality Details	Bore Details (feet.)	Thickness of carbonaceous horizon(ft)	Overburden (feet)	Water Cut (feet)
21	Bore 12 A1 Wanilla Soldier Settlement Sec 94 Hd. Wanilla Co. Flinders.	0-16 yellow clay and laterite; 16-43 fine yellow sand and some grit; 43-49 white sand; 49-53 brown sandy clay with considerable mica; 53-69, dark brown lignitic clay; 69-72 brown clay and quartz sand; 72-75 lignite with pyrite nodules	22 plus	53	43 69
22	Bore 3B Wanilla Soldier Settlement Sec 91 Hd/ Wanilla Co. Flinders	0-2 soil and laterite; 2-9 red, yellow clays and sands; 9-13 yellow sandy clay; 13-21 yellow sandy clay; 21-115 white and coloured sands; 115-129 dark brown fine sand; 129-134, brown sand with considerable mica 134-151 grey sand with traces of lignite.	17 plus	134	57 140
23	Bore 3A Wanilla Soldier Settlement Sec 91 Hd Wanilla Co Flinders	0-11 sandy clay and laterite; 11-60 yellow and cream sand; 60-80 grey sandy clay with carbonaceous matter; 70-75 carbonaceous material and grey sand; 75-78 lignite in brown sand; 78-85 grey sand and carbonaceous matter.	25 plus	60	70 80
24	Bore 20 B1 Wanilla Soldier Settlement Section 92 Hd. Wanilla Co Flinders	0-11 yellow and brown clay; 11-70 grey and yellow sand; carbonaceous clay and sand with some lignite; 93-98 black sand and clay; 98-134 grey gritty clay; 134-195 micaceous gritty clay.	70-93	28	70 93
25	Bore 20 B2 Wanilla Soldier Settlement Section 92 Hd Wanilla C. Flinders	0-11 brown lateritic clay; 11-78 coloured siliceous sands; carbonaceous clay; 90-98 dark grey carbonaceous sand; 98-102 dark grey carbonaceous clay; 102-130 dark grey sand bearing pyrites and mica; 130-143 grey sand and mica.	78-90	24	78 90 130

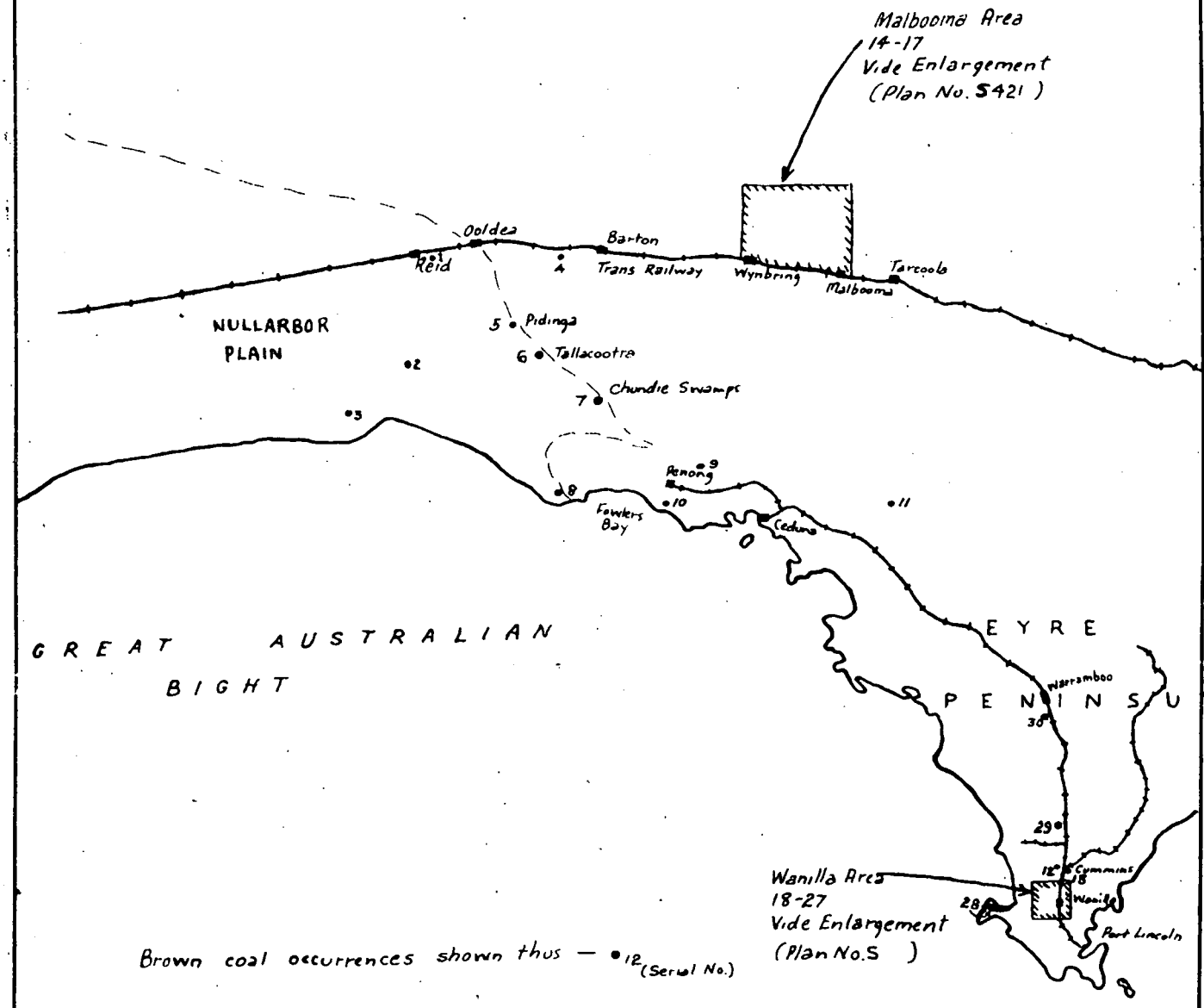
Serial No.	Locality Details	Bore Details (feet)	Thickness of carbonaceous Horizon (feet)	Overburden (feet)	Water Cut (feet)
26	Bore 23 A Wanilla Soldier Settlement Section 115 Hd Wanilla Co. Flinders	0-1½ yellow sand; 1½-15 yellow and grey clay; 15-25 sandy clay and gravel; 25-48 fine grey and white sand; 48-50, white clay; 5054 fine white sand; 54-65 sandy clay; 65-70 dark brown sand and pyrites; 70-71 carbonaceous clay with pyrites; 71-88 dark brown sand and clay; white and grey sand	23	65	46
27	Bore 5 Al Wanilla Soldier Settlement Sec 114 Hd Wanilla Co. Flinders	0-1½ soil and laterite; 1½-9 yellow and brown clay; 9-15 pink clayey sand; 15-28 white and pink sand; 28-96 white pipe clay with quartz; 86-104 grey and white sand; 104-116 brown sand with traces of lignite; 116-154½ brown and green sand; 154½-155 gneiss.	12	104	86 145
28	Point St. Isaac Coffin Bay Hd. Lake Wangarry Co Flinders	Outcropping seam in coastal cliffs	2-3inches	?	
29	Coomaba Bore Section 36(?) Hd. Shannon Co. Musgrave	0-8 gypsum; 8-11 sandy yellow clay; 11-15 clay and ironstone pebbles; 15-20 hard ironstone; 20-25 red sandy clay; 25-43 white sandstone; 43-59 ligneous clay; 59-100 sand and lignite; 100-252 coarse sand and gravel; 252-308 granite bedrock.	57	43	14
30	Musgrave Bore Section 3 Hd Ulyerra	0-1 sand; 1-3 limestone; 3-8 red sandy clay, 8-49 sand and ironstone; 49-70 indurated sand; 70-83 sand; 83-95 sandy clay; 95-118 clay and lignite 118-143 sand and lignite; 143-188 ligneous clay; 188-195 sand; 195-225 ligneous clay; 225-326 purple and white clay; 326-350 granite bedrock.	130	95	78

TABLE II

ANALYSES OF WEST COAST LIGNITES

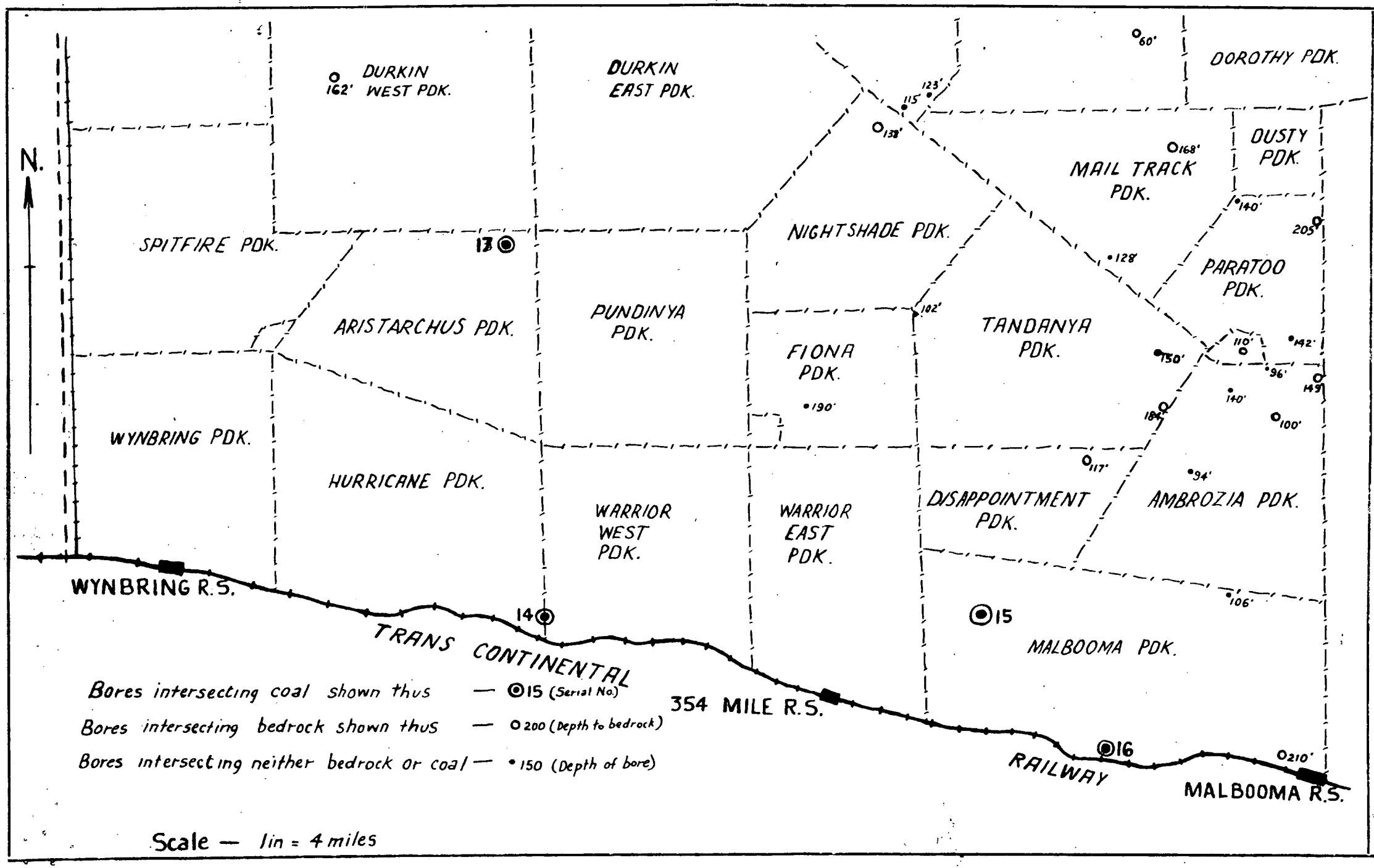
Serial No of Occurrence (see plan)	Depths From (feet)	Depths To (feet)	Thickness (feet)	AS RECEIVED (Air-Dried) Moisture %	Volatiles %	Fixed Carbon %	Ash %	Recalculated to 12% Moisture Basin Moisture	Volatiles	Fixed Carbon	Ash
6 (Pidinga 1932)	near surface		-	19.78	40.11*	29.56	10.55	12.00	44.00	32.42	11.57
6 Trail Bore No. P15 (Pidinga 1949)	2½	6½	4	6.24	17.24	12.81	63.71	12.00	16.81	12.02	59.79
	6½	11	4½	7.67	25.30	14.82	52.21	12.00	24.11	14.12	49.76
	11	16	5	6.73	24.49	13.29	55.49	12.00	23.11	12.54	52.35
	16	21	5	6.96	22.61	14.37	56.06	12.00	21.38	13.59	53.02
	21	23½	2½	5.00	17.41	10.85	66.74	12.00	16.13	10.05	61.82
	23½	26½	3	11.38	37.15	28.25	23.22	12.00	36.89	28.05	23.06
	26½	29¼	2¾	9.45	41.21	29.43	19.91	12.00	40.05	28.60	19.35
	30¾	34½	3¾	5.51	27.22	13.47	53.80	12.00	23.35	12.54	50.10
	34½	25½	1	9.91	39.80	27.54	22.75	12.00	38.88	26.90	22.22
	35½	41½	6	8.78	39.77	25.36	26.09	12.00	38.37	24.46	25.17
7 (Lake Tallacootra 1933)	near surface		-	15.17	37.91*	32.59	19.33	12.00	39.33	33.81	14.86
15 (Malbooma 1959)	63	120	?	2.45	27.02++	6.96	63.57	12.00	24.37	6.28	57.35

Footnotes: * Sulphur 3.19
+ Sulphur 2.80
++ Sulphur 0.40



S. A. G. DEPT. OF MINES

Approved	Passed	Drn D.K	LOCALITY MAP	D.M.	Scale 70 miles = 1 inch.
		Tcd. D.K.	EYRE PENINSULA COAL OCCURRENCES	Req.	S 420
		Ckd.			AB+D
Director	C.D.	Exd.			Date



S. A. G. DEPT. OF MINES

PLAN OF MALBOOMA AREA SHOWING BORES INTERSECTING BROWN COAL

Scale 1 inch = 4 miles

S 4-21 Bb

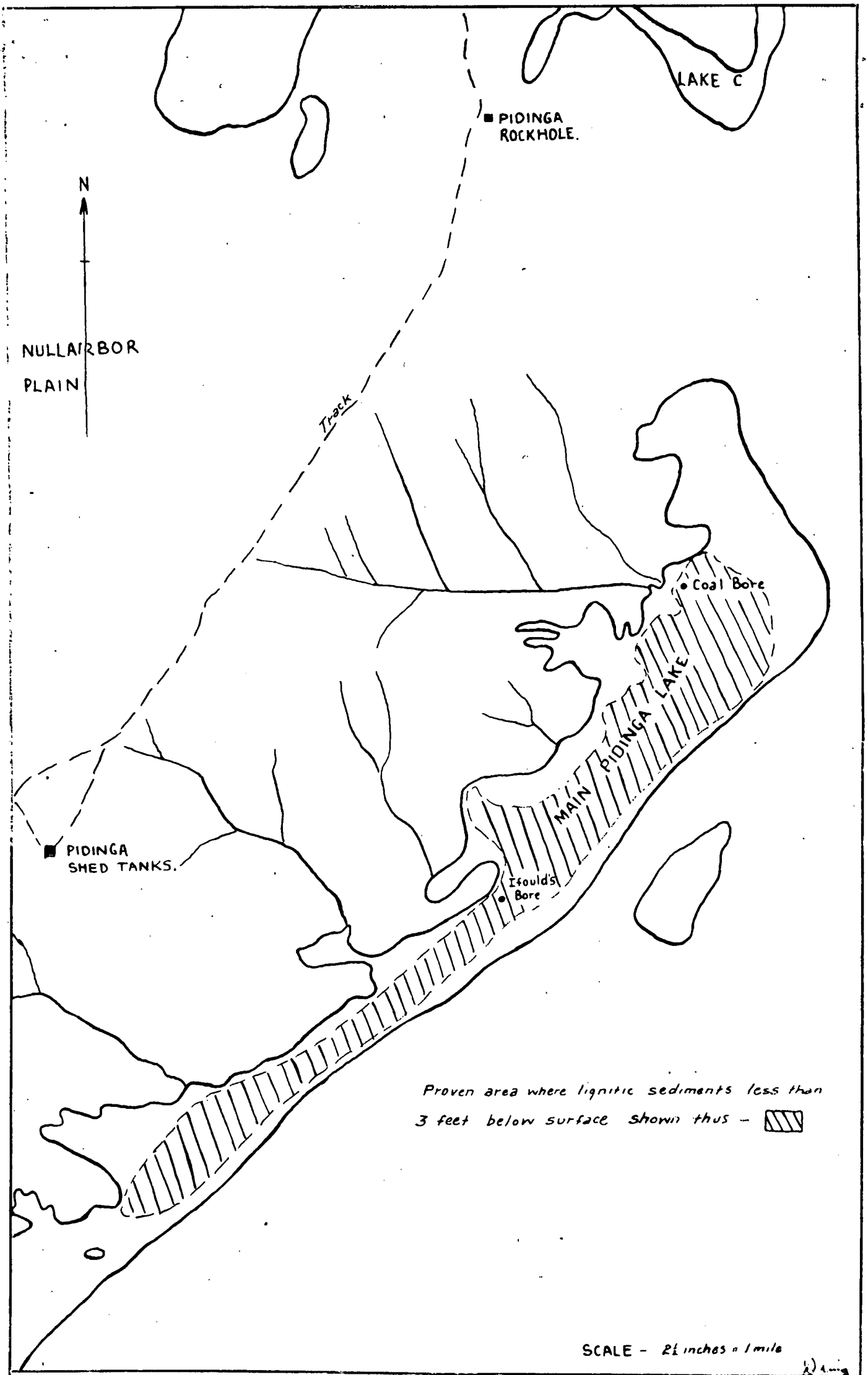
Date 28-2-51

D.M. | Req.

Drn. D.K | Tcd. D.K. | Ckd. | Exd.

Passed | C.D.

Approved | Director



S. A. G. DEPT. OF MINES

Approved	Passed	Drn. D.K	PIDINGA AREA SHOWING PROVEN EXTENT OF BROWN COAL OCCURRENCE.	D.M.	Scale 2½ in = 1 mile
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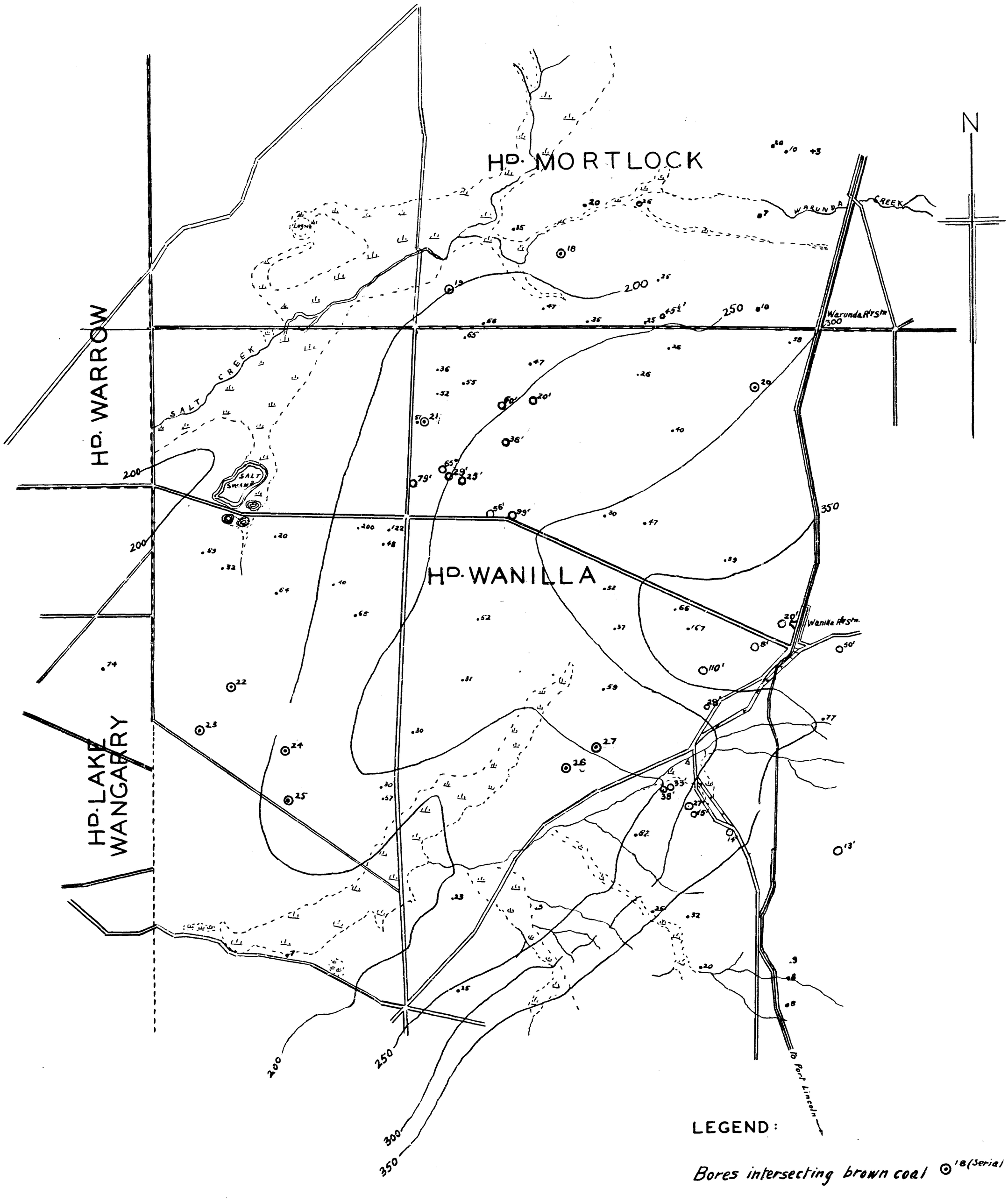
		Ckd.			Ac
Director	C.D.	Exd.			Date



LEGEND:

Bores intersecting brown coal ⊙ 18 (Serial No.)

Bores intersecting bedrock but no brown coal ○ 80' (depth to bedrock)

Bores not intersecting bedrock or brown coal .85 (depth of bore)

Surface contours 250
(Datum L.W.O.S.T. Port Lincoln = 100')

S. A. DEPT. OF MINES

WANILLA SOLDIER SETTLEMENT AREA
BORES INTERSECTING BROWN COAL

No.	Amendment	Exd.	Date

Approved	Passed		Scale 1 mile to 1 inch
T. H. Bowes	H.G.	Drn. Tcd. F.A.M. Ckd. Exd.	51–65
Director	C. D.		Date 5.3.51 Dn 5/6+8/51