Open File Envelope No. 4600

EL 881 TO EL 887 INCLUSIVE

LAKE WARRAKALANNA, NOTTS HILL, LAKE WANCOOCHA, KOORE HILL, LAKE BURRUNA, COTTON BUSH AND DUNJEROO

FINAL REPORT TO LICENCES' JOINT SURRENDER FOR THE PERIOD 28/9/1981 TO 12/11/1981

Submitted by
CRA Exploration Pty Ltd
1981

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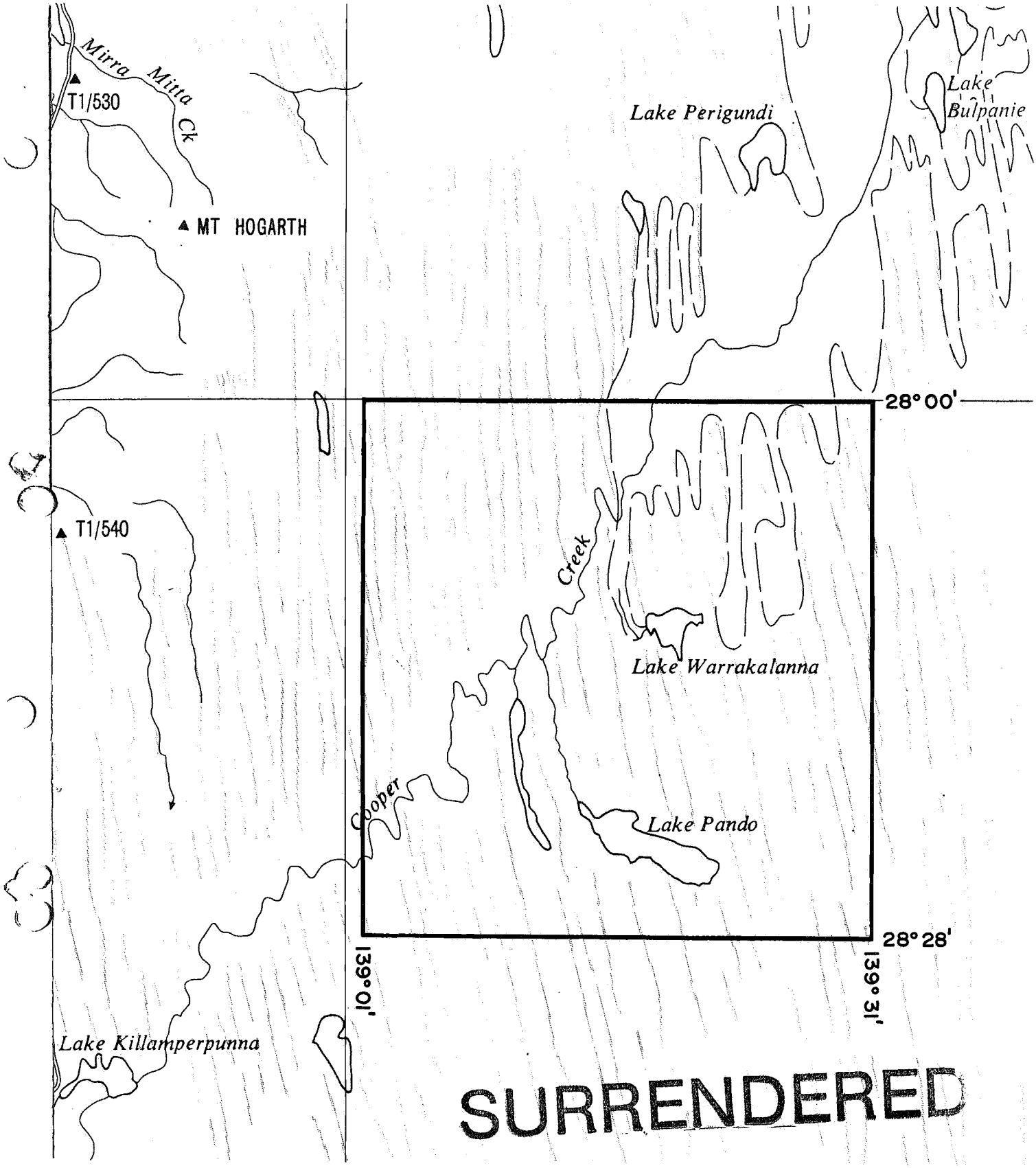
Government of South Australia
Primary Industries and Resources SA

SCHEDULE A



SCALE 1:500,000

KILOMETRES 10 0 10 20 30 40 50 KILOMETRES

APPLICANT: **C.R.A. EXPLORATION PTY. LIMITED**

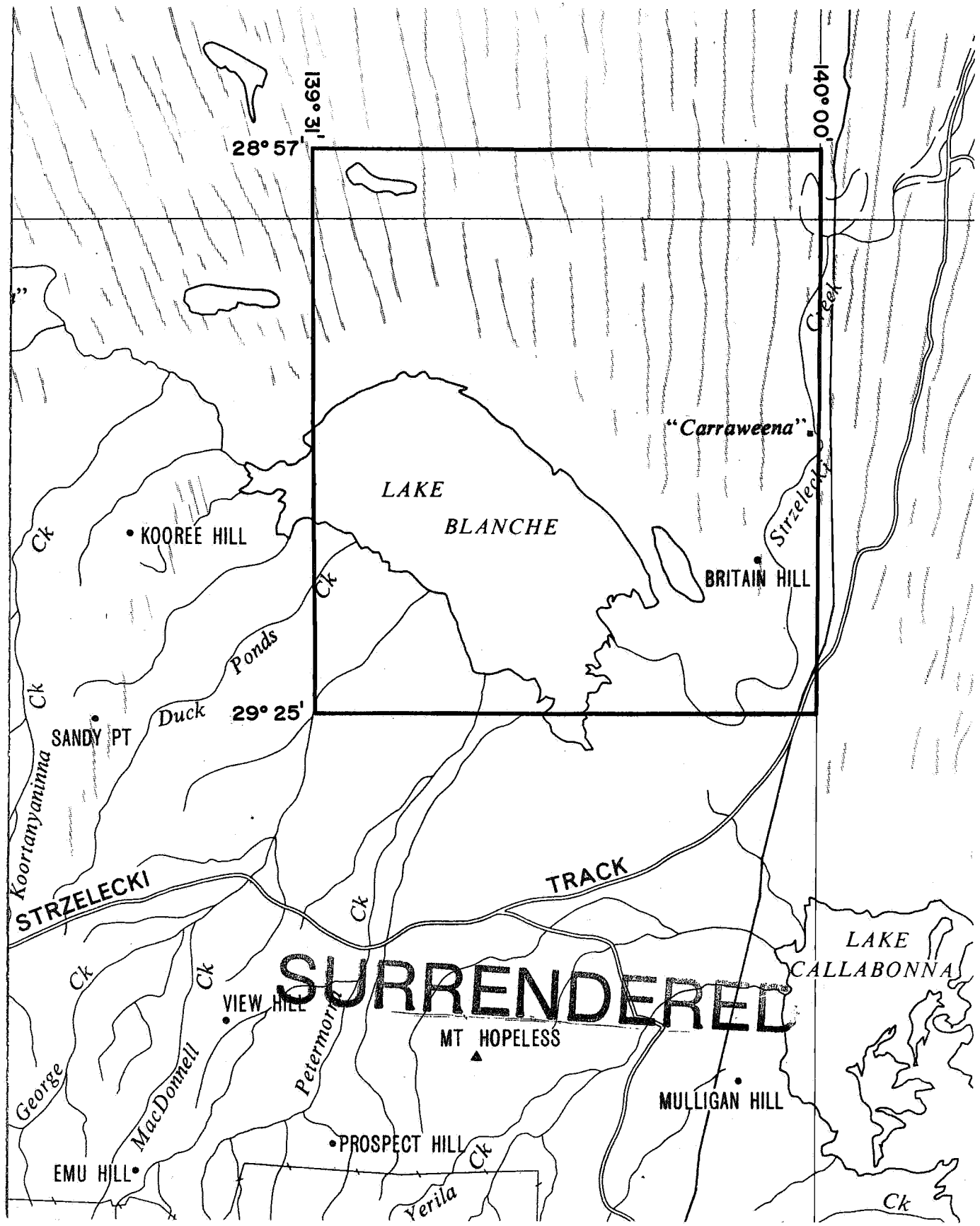
DM: **163/81** AREA: **2538** square kilometres

1:250000 PLANS: **KOPPERAMANNA STRZELECKI**

LOCALITY: **LAKE WARRAKALANNA AREA – Approx. 90 km west of Moomba.**

DATE GRANTED: 28-9-81 DATE EXPIRED: 27-9-82 EL No: 881

SCHEDULE A



APPLICANT: **C.R.A. EXPLORATION PTY. LIMITED**

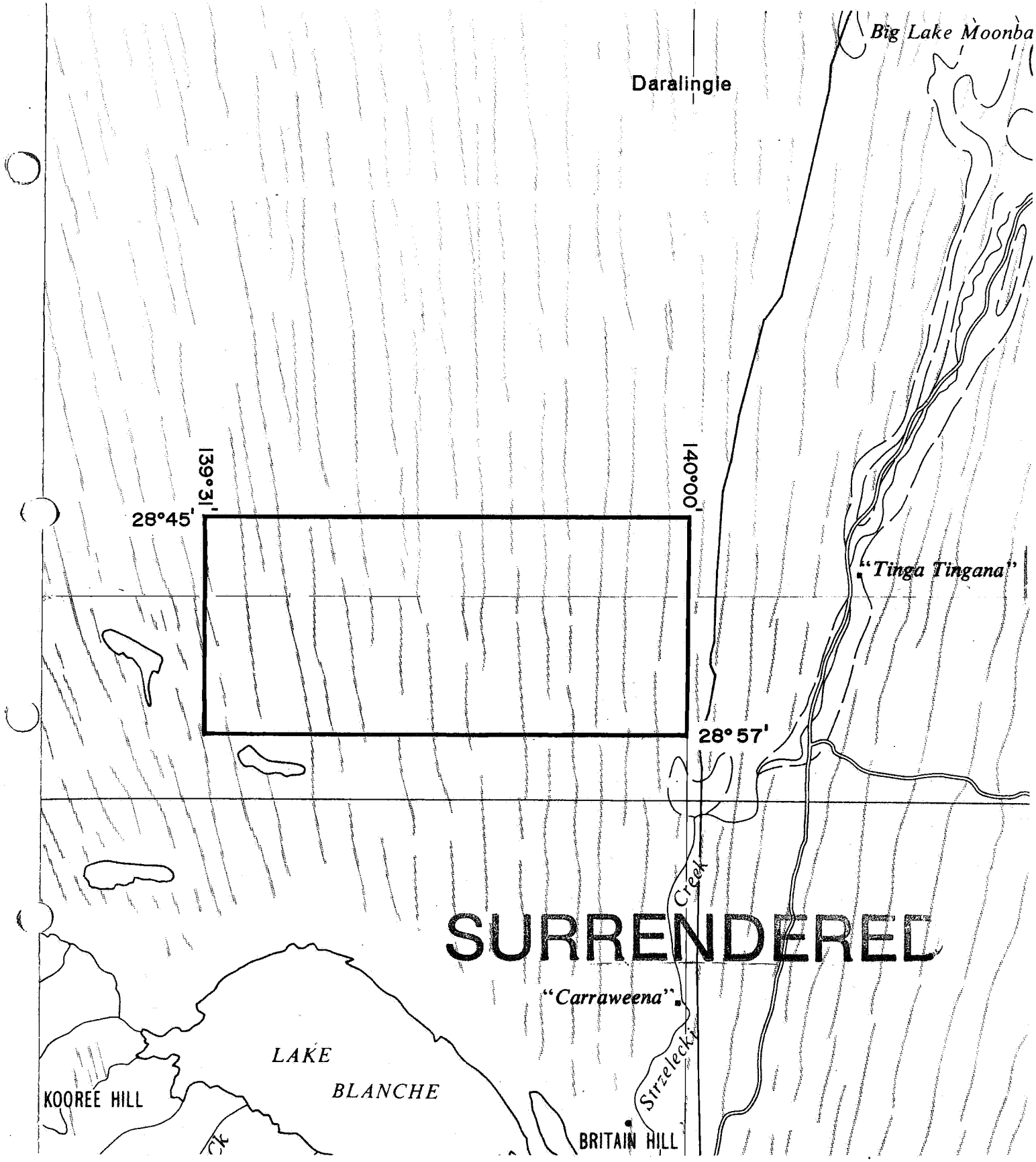
DM: **164/81** AREA: **2431** square kilometres

1:250000 PLANS: **STRZELECKI CALLABONNA**

LOCALITY: **LAKE BLANCHE AREA – Approx. 140km south of Moomba.**

DATE GRANTED: 28-9-81 DATE EXPIRED: 27-9-82 EL No: 882

SCHEDULE A



APPLICANT: C.R.A. EXPLORATION PTY. LIMITED

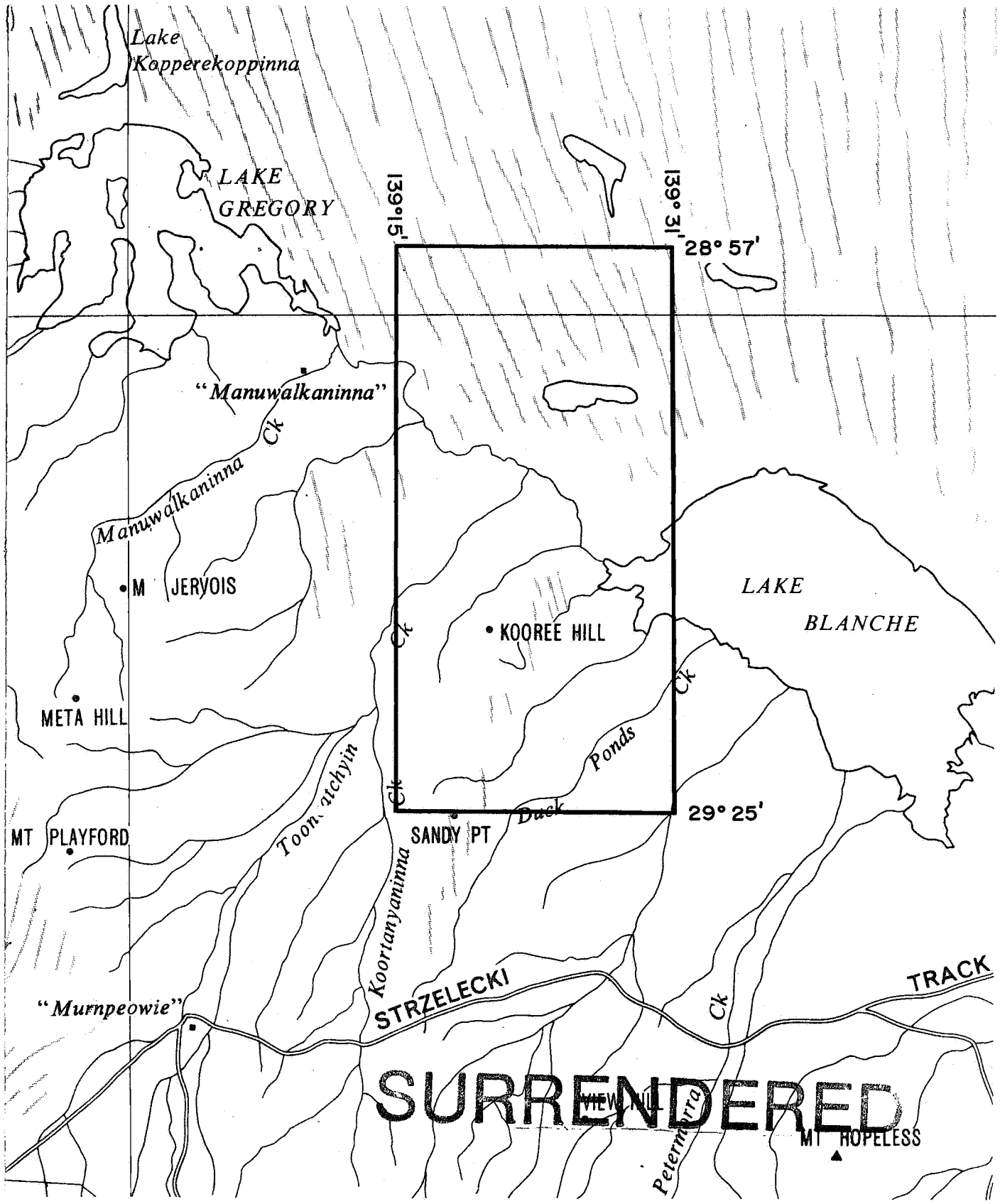
DM: 165/81 AREA: 1·045 square kilometres

1:250000 PLANS: STRZELECKI

LOCALITY: TINGA TINGANA WEST AREA — Approx. 80km south of Moomba

DATE GRANTED: 28·9·81 DATE EXPIRED: 27·9·82 EL No: 883

SCHEDULE A



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APPLICANT: C. R. A. EXPLORATION PTY. LIMITED

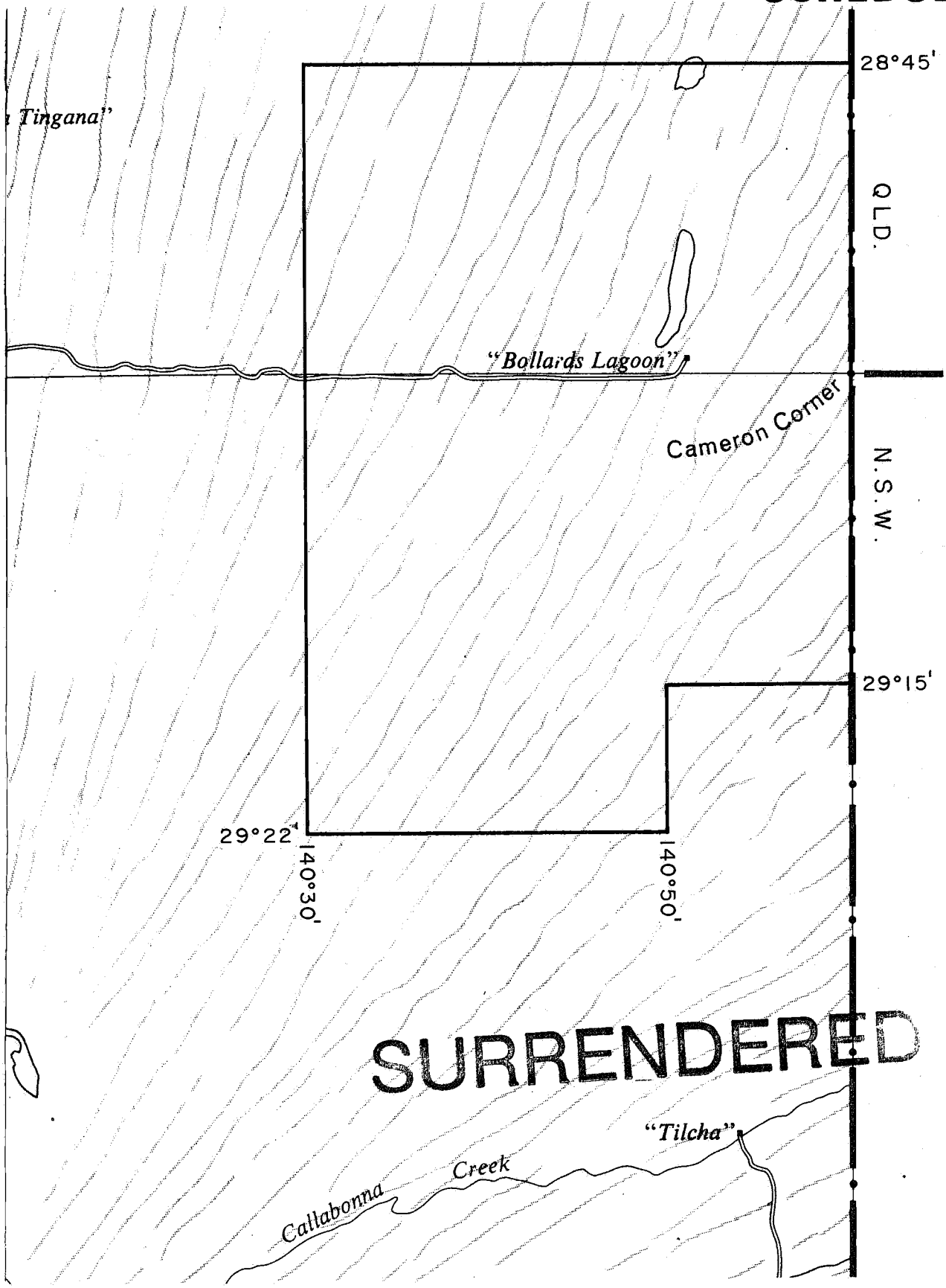
DM: 166/81 AREA: 1341 square kilometres

1:250000 PLANS: KOPPERAMANNA STRZELECKI
MARREE CALLABONNA

LOCALITY: KOOREE HILL AREA — Approx. 150 km southwest of Moomba.

DATE GRANTED: 28-9-81 DATE EXPIRED: 27-9-82 EL No: 884

SCHEDULE A ✓



SCALE 1:500,000

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APPLICANT: C.R.A. EXPLORATION PTY. LIMITED

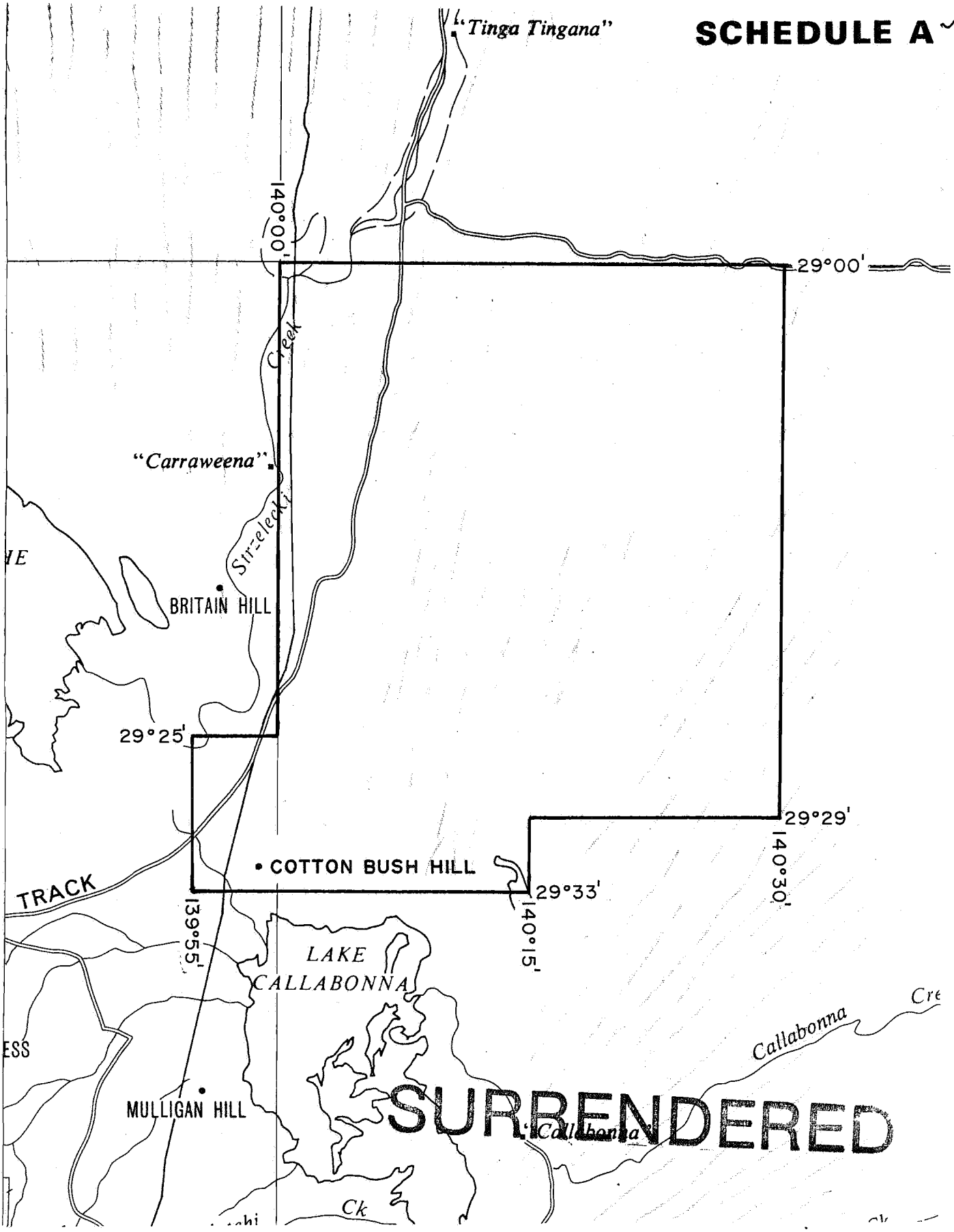
DM: 168/81 AREA: 3118 square kilometres

1:250000 PLANS: STRZELECKI CALLABONNA

LOCALITY: BOLLARDS LAGOON H.S. AREA - Approx. 110km S.E. of Moomba

DATE GRANTED: 28-9-81 DATE EXPIRED: 27-9-82 EL No: 885

SCHEDULE A



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APPLICANT: C.R.A. EXPLORATION PTY. LIMITED

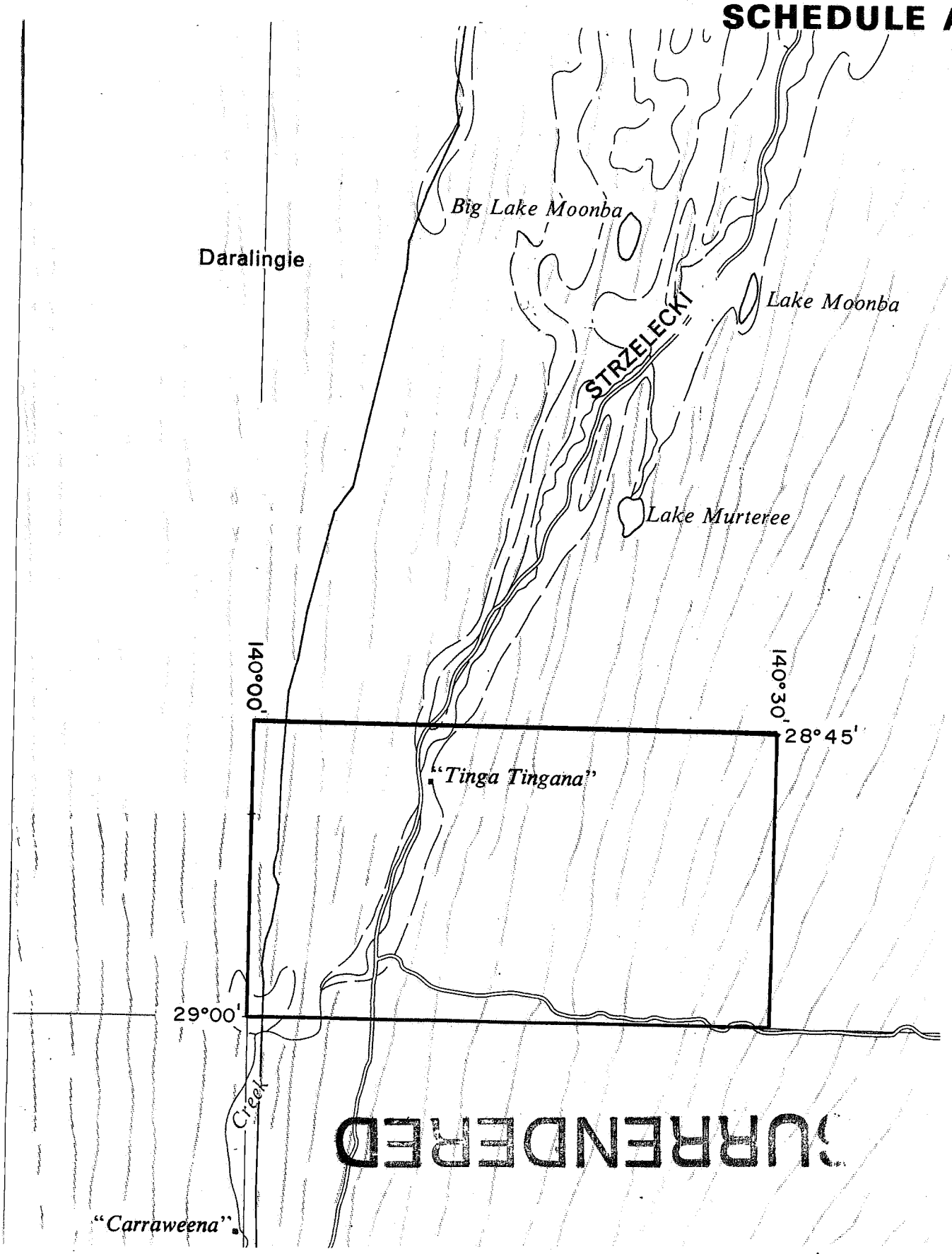
DM: 169/81 AREA: 2902 square kilometres

1:250000 PLANS: CALLABONNA

LOCALITY: COTTON BUSH HILL AREA - Approx. 140km S. of Moomba

DATE GRANTED: 28-9-81 DATE EXPIRED: 27-9-82 EL No: 886

SCHEDULE A



SCALE 1:500,000

KILOMETRES 10 0 10 20 30 40 50 KILOMETRES

APPLICANT: C.R.A. EXPLORATION PTY. LIMITED

DM: 170/81 AREA: 1352 square kilometres

1:250000 PLANS: STRZELECKI

LOCALITY: TINGA TINGANA H.S. AREA - Approx. 80km S. of Moomba

DATE GRANTED: 28-9-81 DATE EXPIRED: 27-9-82 EL No: 887

CONTENTS ENVELOPE 4600

TENEMENT: E.L's. 881 to 887 (Inc.)

TENEMENT HOLDER: C.R.A. Exploration Pty. Ltd.

CRA EXPLORATION PTY. LIMITED

FINAL REPORT FOR THE COOPER BASIN - LAKE WARRAKALANNA, E.L. 881, NOTTS HILL E.L. 882, LAKE WANCOOCHA E.L. 883, KOOREE HILL E,L, 884, LAKE BURRUNA E.L. 885, COTTON BUSH, E.L. 886, DUNJEROO E.L. 887 - SOUTH AUSTRALIA, 1981.

AUTHOR : D.R. McBAIN
DATE : 17TH NOVEMBER, 1981
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SUBMITTED BY: D.R. McBain
ACCEPTED BY : A.K. Kennedy

Ref. No. 10956

CONTENTS

1. SUMMARY

A preliminary review to define objectives and modus operandi was undertaken as the initial facet of CRAE's Cooper Basin coal exploration programme. Having defined CRAE's areas of interest, oil well and seismic data was being acquired, for a detailed data evaluation prior to CRAE field operations.

Geothermal studies have indicated that temperatures in excess of 50°C could be expected.

Decision was reached to surrender the tenements several weeks after issue.

2. INTRODUCTION

Exploration licences 881-887 were applied for as part of CRA Exploration Pty. Limited's coal initiative within South Australia.

It is recognised that the Cooper Basin hosts one of the largest black coal resources in the world.

E.L.'s 881 - 887 were granted to CRA Exploration Pty. Limited on 28th September, 1981 for a period of twelve months. This report details all work carried out by CRA Exploration Pty. Limited prior to 12th November, 1981 when the tenements were surrendered.

3. RATIONALE

Significant intersections of high quality black coal have been reported from the Cooper Basin oil wells.

The above E.L.'s were applied for in the southern and south western parts of the Cooper Basin to test the development of the coal seams in the shallower parts of the basin.

The resource is considered economically significant in the long term, in spite of the depths and temperatures due to the shallow dip, relative lack of seam disturbance, seam thickness and the high quality of the coal seams.

4. WORK CARRIED OUT

4.1 Preliminary Review

As an initial step a preliminary review was undertaken using existing compiled regional data. The aim of the preliminary review was to acquire an overview and "feel" for the Cooper Basin, with the ongoing precept of area selection, formulation of strategies and exploration concepts.

The reports by Thornton (S.A.D.M.E., 1979) and Sykes (X.L. Group, 1980) were used as the main references for the preliminary review.

The preliminary review outlined areas of further interest, and enabled a modus operandi to be formulated. Conflicting information, in relation to the edge of the Permian and near margin coal development, emerged from the review. This conflict stems from the differing interpretations of the poor quality seismic data, and has not been resolved.

Based on the information compiled from the review, CRAE initially applied for tenements in the shallower southern and south-western margins of the basin. Subsequently, prior to the granting of the E.L.'s the area applied for was reduced after consultations with the S.A.D.M.E. The area retained was the shallower parts of the initial tenements applied for as they would present targets of a shorter term proposition than the deeper parts.

4.2 Acquisition & Evaluation of seismic and oil well data.

Following on from the preliminary review it was decided to return the original records in the form of oil well reports, and seismic sections and reports. It was envisaged that the seismic data would be as fully re-interpreted as the data quality would allow.

A major problem with the seismic data is that the majority is only 100% covered (rather than 300 - 600%) and of poor to moderate quality. Using the oil wells as control it was hoped to determine which of the seismic sections contained data of interest and were of a quality to warrant digital reprocessing for further interpretation.

The evaluation of the seismic data had a dual purpose. Firstly it was envisaged that the conflict between the Thornton and Sykes report, regarding the edge of the Permian, would be resolved. Secondly, the best area of coal development was to be selected. A seismic survey would then have been undertaken by CRAE within the selected area. The function of the seismic survey would have been to locate a borehole, which would test the coal seam thicknesses and quality measure geothermal conditions, and enable rock mechanical studies of seam conditions to be carried out.

Most of the relevant oil well and seismic survey reports have been acquired. Acquisition of the seismic sections from the relevant surveys was in progress, but was terminated when surrender of the E.L.'s was imminent.

4.3 Geothermal studies

A recent review of geothermal data has revealed that the Cooper Basin has possibly the highest geothermal gradient of any sedimentary basin within Australia.

The geothermal gradient is in the order of 3.6° - 7.2°C/ 100 metres. This gives a calculated temperature of between 35° - 70°C at the minimum envisaged target depth of 1000 metres, and between 54° - 108°C at 1500 metres.

Temperatures of this order could create great problems for mine planning and operation, besides considerably increasing the costs of such a mining operation. Technological advances are required to produce more cost efficient methods of climatic control. Possible technological developments from the South African gold mines, where there are comparable temperatures, could have application in the longer term.

D.R. McBain

D.R. McBAIN

DRM/lc

REFERENCES

Sykes I.G. - Authority to prospect 240 and 270: Australian Prospect Digest, April, 1980.

Thornton R.C.N. - Regional Stratigraphic Analysis of the Gidgealpa Group, Southern Cooper Basin, Australia: S.A.D.M.E. Bulletin 49, 1979.

KEYWORDS

Callabonna SH54-6, Kopperamanna SH54-1, Marree SH54-5, Strzelecki SH54-2, Cooper Basin, Permian, Coal, Geophys-seismic, Geothermal gradients.

LOCATION

Callabonna	SH54-6	1:250,000
Kopperamanna	SH54-1	1:250,000
Marree	SH54-5	1:250,000
Strzelecki	SH54-2	1:250,000

LIST OF PLANS

Plan No.	Title of Plan	Scale
SAa 1122	Cooper Basin - CRA Exploration licences	1:1,000,000

139°00'
140°00'
141°00'
28°00'
28°28'
139°01'
139°31'
LAKE WARRAKALANNA
E.L. 881
Lake Warrakalanna
SOUTH AUSTRALIA
QUEENSLAND
28°45'
139°31'
140°00'
140°30'
141°00'
STRZELECKI CREEK
LAKE WANCOOCHA
E.L. 883
DUNJEROO
E.L. 887
Lake Kopperekoppinna
LAKE GREGORY
28°57'
139°15'
29°00'
LAKE BURRUNA
E.L. 885
KOOREE HILL
E.L. 884
NOTTS HILL
E.L. 882
COTTON BUSH
E.L. 886
Notts Hill
Kooree Hill
MT. JERVOIS
LAKE BLANCHE
29°15'
29°22'
140°50'
29°25'
29°29'
140°30'
Cotton Bush Hill
29°33'
140°15'
139°55'
LAKE CALLABONNA
MT. HOPELESS
CALLABONNA CREEK
NEW SOUTH WALES
MT. FREELING
30°00'

SCALE

KILOMETRES 0 10 20 30 40 50 60 KILOMETRES

C R A EXPLORATION PTY. LIMITED

COOPER BASIN

CRAE EXPLORATION LICENCES

Ref.: STRZELECKI SH54-2, MARREE SH54-5, KOPPERAMANNA SH54-1, CALLABONNA SH54-6.

Scale : 1 : 1,000,000.	Drawn : S.J.B.
Author : D.R.M.	Report No. : 10956
Date : OCTOBER 1981	Plan No. : SAa 1122

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