# **Pedirka Basin Pty Ltd**

# A subsidiary of Ebony Energy Ltd RELINQUISHMENT REPORT

for

# EL29239

# PEDIRKA BASIN PROJECT

**Exploration for Thermal Coal** 

# FOR THE YEAR 4/1/2016 to 3/1/2017

Prepared by

# Ebony Energy Ltd

Date: 21<sup>st</sup> February 2017

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Project	Project Pedirka Basin		28 February 2017
Title	Block Relinquishment Report EL29239 – Pedirka Basin Project For 12 months from 4 January 2016 to 3 January 2017.		
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#### **REVISION/VERIFICATION HISTORY**

REVISION NUMBER	DATE	PREPARED BY	REVIEWED BY
Rev 1	21/2/2017	David Weidemier	Nick Raffan
Rev 2	28/2/2017	David Weidemier	Nick Raffan
Rev 3			

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# 1) ABSTRACT

Mineral Exploration Licence (EL) 29239 was granted to Ebony Iron Limited on January 4, 2013 for a term of 6 years. EL29237 was granted at the same time. These two ELs are the southern tenements of the Pedirka Basin Project. The tenement was transferred to Ebony Coal Ltd on March 26, 2013 and subsequently transferred to Pedirka Basin Pty Ltd (a fully owned subsidiary of Ebony Energy Ltd) on 30 April 2015.

EL29239 is located about 180km southeast of Alice Springs. This tenement was comprised of 202 sub-blocks that covered an area of 604.22 square kilometres. EL29239 adjoins the northern boundary of EL29237.

Following an assessment of the economics of extracting coal across the tenements, the blocks identified in Figure 1 (in purple) have been relinquished as not warranting further exploration – a reduction of 96 sub-blocks.

On 17 January 2017, the company's was advised by the Department of Primary Industry and Resources of acceptance of the reduction in the tenement region.

No specific activities were undertaken in the specific region of the relinquished subblocks.

#### 2) TENEMENT LOCATION

Figure 1 depicts EL29239 and identifies the sub-blocks relinquished (in purple).

This is one of the most remote areas of Australia with the nearest rail infrastructure some 200 kilometres directly west of the licence.

In terms of its regional setting, EL29239 is located towards the western edge of the Pedirka Basin, which is Permo-Carboniferous in age. The tenement is located in the southern portion of the Hale River Project cluster of tenements. Geographically, EL29239 lies around 220km southeast of Alice Springs.

This part of the country is devoid of any infrastructure. There are no sealed roads and few dirt roads and tracks located west and north of the Andado homestead. An airstrip and homestead is less than 3km east of the eastern tenement boundary. Most of the tenement area is covered with northwest-southeast trending sand dunes averaging around 5 metres high. Vegetation is very sparse and mainly restricted to the southwest portion of the tenement that is characterised by clay pans and sediment related to drainage north of the Finke River.

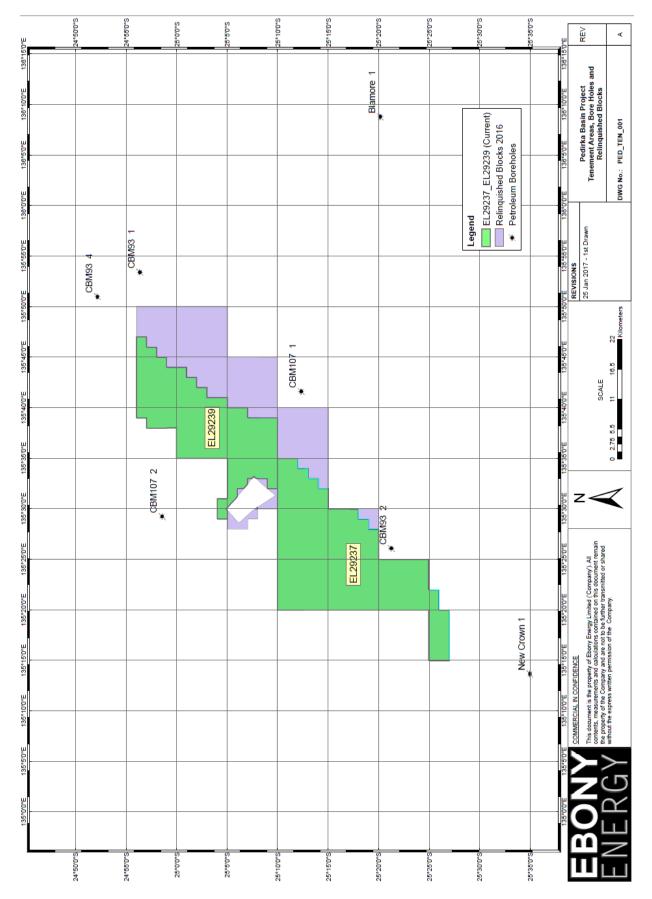


Figure 1 - EL29239 Tenement Outline, Petroleum Boreholes

# 3) TITLE HISTORY

EL29239 was offered for grant to Ebony Iron Ltd on December 7, 2012. The tenement in question was granted on January 4, 2013 for a period of six years. EL29239 comprises 187 sub-blocks for a total area of 604.22 square kilometres. The tenement was transferred to Ebony Coal Ltd on March 26, 2013 and subsequently transferred to Pedirka Basin Pty Ltd (a fully owned subsidiary of Ebony Energy Ltd) on 30 April 2015.

Following an assessment of the economics of extracting coal across the tenements the company relinquished 96 sub-blocks.

# 4) EXPLORATION RATIONALE AND HISTORY

Most of the Pedirka Basin Project has a various history of exploration for petroleum or base metals and/or uranium, precious metals, diamonds and mineral sands. Mineral explorers include BHP Billiton, Rio Tinto, CRA Exploration, Pan Continental Mining and Roebuck Resources. Recent and current explorers for energy include Amerada Petroleum, Central Petroleum, Merlin Coal and Tri Star Energy and others. The only historical work over EL29239 and EL29239 was the Simpson Desert "A" Seismic Survey carried out by Amerada Petroleum in 1966. Unfortunately the data is not preserved.

The first subsurface information was probably observed from the first water bore competed in 1960. Some 43 waterbores occur within the Pedirka Basin Project. Two bores sunk in 2008; RN018519 and RN018518 intersected clay, lignite and silcrete bands over broad widths. The holes were not logged for geological information and are of little use other than to confirm that both holes intercepted coal.

Flamingo Petroleum undertook detailed exploration of the Pedirka Basin in 1964. This company completed two seismic lines that were shot along a structural high. One line was east-west and the other north-south along Hale River. The seismic sections revealed a regional dip to the southeast. The data also indicated that the Mesozoic sediments also thicken in the same direction.

A regional dip towards the southeast has implications for the Pedirka Basin Project. A simplistic geological model assumes a regional dip of only one degree within EL29239 and EL29239.

The main thrust behind the rationale for establishing the Pedirka Basin Project to explore for export quality thermal coal are thick sequences of coal reported by CTP southeast of the Project area. CTP has announced that the company's Pedirka Basin tenements host an exploration target of 300 billion tonnes of coal.

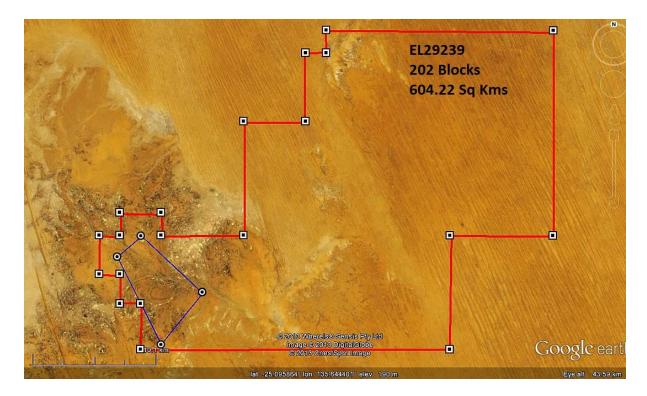


Figure 2 - EL29239 Regional Landforms (Google Earth).

CTP held EPs covering most of the tenements. No named petroleum wells were spudded within EL29239 however two waterbores were and coal was not reported from these bores. CTP has reported thick intersections of sub-bituminous coal in many drill holes. An example is Blamore-1 completed in 2008, drilled to a depth of 2,128 metres, intercepted net coal of 160 metres in seams greater than 0.2 metres. Elsewhere, CBM93-001 intersected net coal of 141.8 metres with seam thickness greater than one metre. The thickest coal seam intersected was 34 metres between 976 and 1,010 metres depth; this coal is too deep to mine.

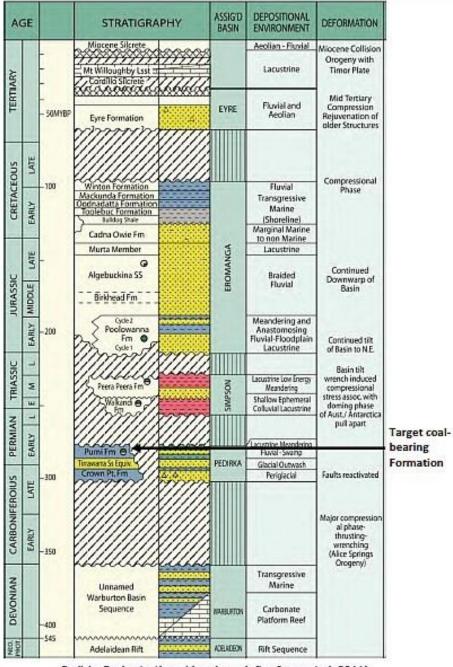
CTP's nearest reported intercept of coal was from CBM 93-002; located 2 kilometres east of EL29239. Net coal of 101.7 metres with seams over one metre thick were inferred from wire line logs. The maximum inferred seam thickness was 14.2 metres.

In summary the size of CTP's coal exploration target and the thicknesses of coal intercepts in many drill holes is compelling rationale to explore the Pedirka Basin Project for at or near surface coal closer to the margin of the Pedirka Basin

#### 5) GEOLOGICAL DATA

#### a. Regional Geology of the Hale River Project Area

The Pedirka Basin straddles the Northern Territory and South Australian border in Central Australia. Most of the basin lies in the Northern Territory. The area of the basin is around 62,500 square kilometres. This part of Australia exhibits a complex geological history that consists of a sequence of sedimentary basins superimposed one on top of another. The Pedirka Basin formed when tensional forces between thrust faults reactivated during the Mesozoic resulting in the formation of grabens and tilted horst blocks. Figure 6 shows a regional stratigraphic column; Figure 7 shows NTDME interpretation of 1960s seismic to define Top of Purni depth contours.



Pedirka Basin stratigraphic column (after Jones et al. 2011)

Figure 3 - Regional Pedirka Basin Stratigraphic Column

**Source:** Global Ore Discovery, Hale River Technical Report, 21<sup>st</sup> May 2012.

The eastern portion of the Pedirka Basin is overlain by Triassic Simpson Basin which in turn is covered by the Mesozoic Eromanga Basin. Within the Hale River Project Jurassic to Cretaceous, sequences and recent sands overlie the Pedirka Basin. The principal target for coal exploration is the Purni Formation, which is Lower Permian in age. Global Ore Discovery considers the Purni Formation as the most perspective geological unit to test for thick and laterally continuous coal seams. The Purni Formation exhibits a shallow dip of 1-5 degrees in a south easterly direction. The dip increases from one degree at the basin margin to as high as five degrees towards the centre of the basin.

Exploration for oil and gas saw a large number of seismic surveys completed across the Pedirka Basin between 1961 and 2011. The oldest data is lost.

#### b. Tenement Geology

The underlying geology is hidden by sand dunes, clay pans and alluvial deposits. However, historical drilling, seismic and mapping elsewhere in the Pedirka Basin has provided profiles through the stratigraphy. Local and Regional Stratigraphy is shown in Table 1.

AGE	Ebony Tenures	Pedirka Basin (North)	Pooloowanna Trough	Eringa Trough
Cretaceous		Winton Fm MacKunda Fm Oonadatta Fm		Winton Fm MacKunda Fm Oonadatta Fm
	Rumbalara Shale	Bulldog Shale Cadna Owie Fm	Bulldog Shale Cadna Owie Fm	Cadna Owie Fm
Jurassic	De Souza Sandstone	Murta Mbr Algebuckina Sandstone	Algebuckina Sandstone	Algebuckina Sandstone
			Poolowanna Fm	Poolowanna Fm
Triassic			Peera Peera Fm Walkandi Fm	Peera Peera Fm Walkandi Fm
Permian	Purni Fm	Purni Fm	Purni Fm	Purni Fm Mt Toondina Fm Equiv. Stuart Range Fm Equiv.
Carboniferous	Crown Point Fm	Crown Point Fm	Crown Point Fm	Crown Point Fm

Local and Regional Stratigraphy of the southern most Ebony tenements; Pedirka Basin (outlined in blue) and overlying stratigraphy (PIRSA)

 Table 1 - Local and Regional Stratigraphy

Source: Global Ore Discovery, Hale River Technical Report, 18th May 2012.

#### 6) WORK PERFORMED

No specific desktop activities, field works or boreholes were undertaken on the area comprising the relinquished blocks.

#### 7) CONCLUSIONS AND RECOMMENDATIONS

Based on data across the tenement, there is sufficient data to indicate that the subblocks relinquished warrant further assessment of EL29239 and other Ebony tenements for export quality thermal coal.

#### 8) COMPLIANCE & PROPOSED ACTIVITIES

#### c. Statement of Resources and Reserves

No resources of coal (meeting the JORC code requirements) were identified within the areas being relinquished in EL 29239 during the reporting period.

#### d. Statement of Compliance

The actual programme of works undertaken for the current period is consistent with that proposed by the applicant.

# 9) APPENDICIES

None

#### 10) ABBREVIATIONS

CTP = Central Petroleum Limited

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