



PARTIAL RELINQUISHMENT REPORT FOR EL30689

LITTLE CONE

BIGRLYI JV PROJECT

PERIOD 17 July, 2015 to 24 March, 2017

EL30689_2017_P.pdf

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Commodities: Uranium, Vanadium

250K Map-sheet: Mount Doreen

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TABLE OF CONTENTS

SUMMARY	4
INTRODUCTION	4
REGIONAL GEOLOGY.....	5
LOCAL GEOLOGY	6
PREVIOUS EXPLORATION	6
WORK COMPLETED BY ENERGY METALS LTD JULY 2015 – MARCH 2016.....	10
Geophysics.....	10
Digital Data	10
CONCLUSIONS.....	12
REFERENCES.....	12

LIST OF FIGURES

Figure 1: Bigirlyi & Ngalia regional project areas showing uranium deposits and prospects; the Ngalia Basin is shaded in green.	4
Figure 2: Topographic map showing the location of EL30689 in the Naburula Hills northeast of Cusacks Bore (Mt Doreen Station).	5
Figure 3: Structure and solid geology with selected stratigraphic sections through the Ngalia Basin (from Rippert <i>et al</i> , 1979).	7
Figure 4: Geological Map of the Patmungala Syncline area (Mt Doreen 1:250K map-sheet) showing location of the Little Cone Prospect.	8
Figure 5: Geological Map of the Patmungala Syncline prepared by Afmeco in 1978 (Rippert <i>et al</i> , 1979)	9
Figure 6: EL30689 tenement map showing blocks surrendered and those retained.	10
Figure 7: Ternary radiometric K-Th-U RGB imagery showing surrender area.....	11
Figure 8: Uranium channel radiometric image showing the absence of significant anomalies.	11

SUMMARY

EL30689 was converted from historical title application MLN1953 and was granted in July 2015. The tenement covers the Little Cone uranium prospect within the Patmungala Syncline and was explored by Central Pacific Minerals in the early 1970s. Following a project review, which indicated that a significant part of the tenement included non-prospective Kerridy Sandstone and Djagamara Formation, it was recommended that the eastern three blocks be relinquished and a partial surrender was actioned in March 2017. Exploration work on the surrendered ground during the tenure period was limited to review of geophysical datasets and compilation of historical mapping results.

INTRODUCTION

EL30689 'Little Cone', which comprises seven graticular blocks, was granted on 17th July 2015 following its conversion from historical title MLN1953. EL30689 is part of the Bigrlyi Joint Venture Project (BJV) located within the Ngalia Basin. The BJV Project is a three party joint venture between Energy Metals Ltd (EME: 53.3%), NT Uranium Pty Ltd (NTU: 41.7%) and Southern Cross Exploration (SXX: 5%), with Energy Metals as the operator. EL30689 is located adjacent to ELs 24453 and 24807, which are part of Energy Metals' 100% owned Ngalia Regional Project. The project is located approximately 380 kilometres (by road) northwest of Alice Springs in the Naburula Hills area of Mount Doreen Station (Figures 1 & 2).

The Ngalia Basin has presently defined uranium resources of approx. 15,000 tonnes of U_3O_8 . Modern and historical resources are known from seven uranium deposits (Bigrlyi, Walbiri, Minerva, Karins, Camel Flat, A15E, BigWest & Cappers) with numerous prospects showing good potential for additional resources (Figure 1).

Parts of EL30689 are currently covered by Aboriginal heritage zones where access and ground disturbing works may be restricted, although detailed sacred site surveys have yet to be carried out.

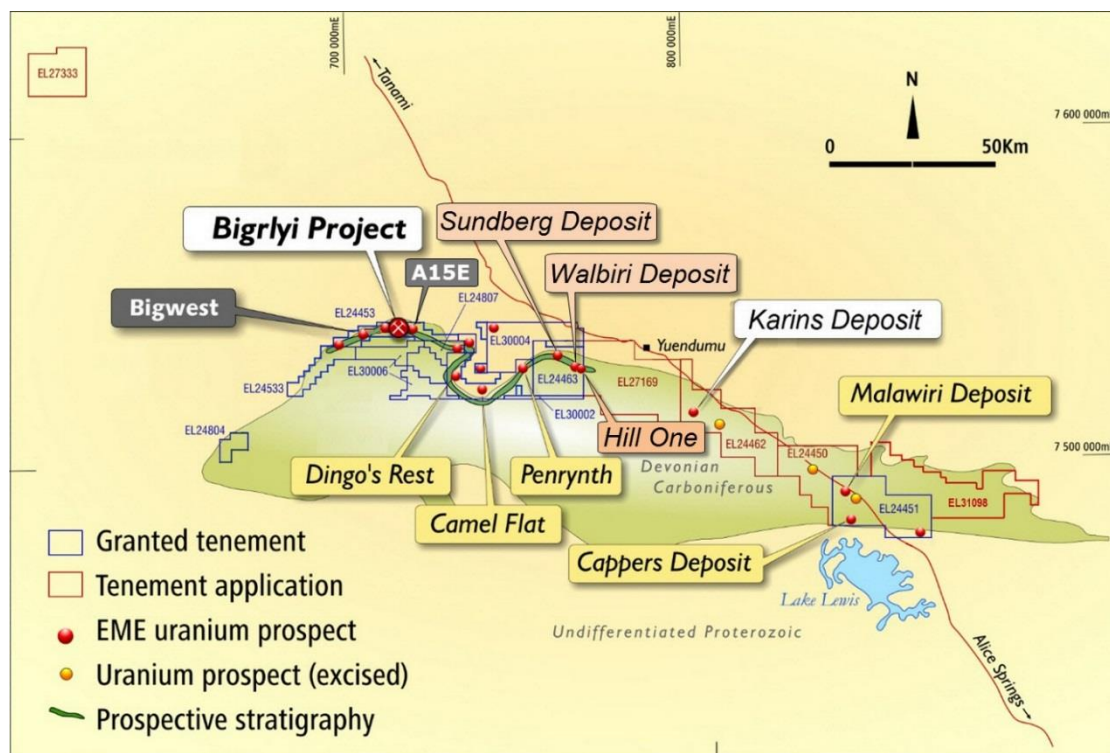


Figure 1: Bigrlyi & Ngalia regional project areas showing uranium deposits and prospects; the Ngalia Basin is shaded in green.

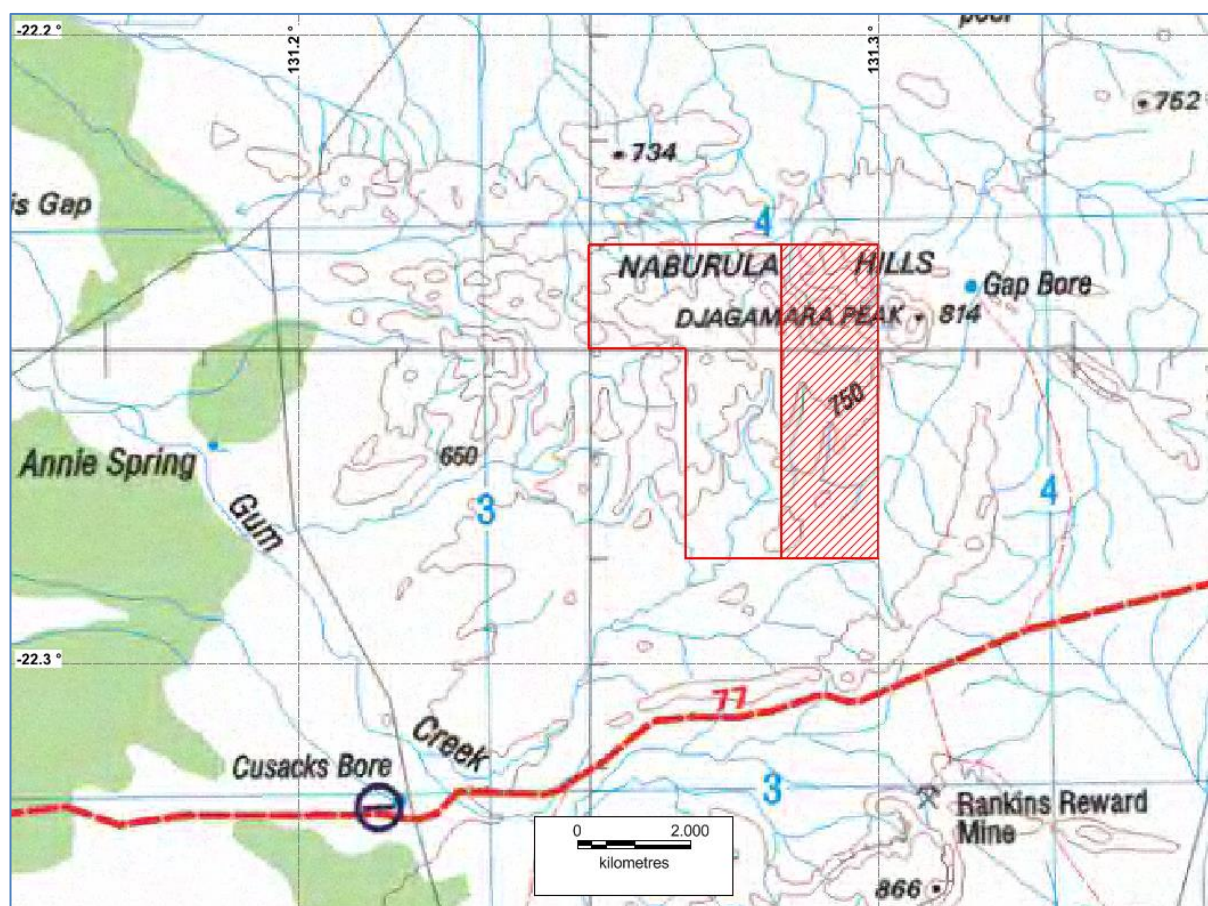


Figure 2: Topographic map showing the location of EL30689 in the Naburula Hills northeast of Cusacks Bore (Mt Doreen Station). Red hatched area shows the relinquished blocks.

REGIONAL GEOLOGY

The Ngalia Basin is an elongate, intracratonic depression filled by Proterozoic, Palaeozoic and Cenozoic sedimentary units, surrounded by a basement of Pre-Cambrian crystalline and metasedimentary rocks. The basin is approximately 300km long east-west and 70km wide north-south at its widest part. The basin underwent substantial north-south shortening and consequent internal deformation mainly during the latter part of the Alice Springs Orogeny (ca. 300 Ma) (Schmid et al., 2011). Both continental and marine sediments comprise the sedimentary stack which is estimated to be up to 6,000m thick. Unconformities and/or thrust faults commonly separate each of the rock units (Dixon, 1976).

The Neoproterozoic Vaughan Springs Quartzite (VSQ) is the oldest unit in the Ngalia Basin and mostly forms ridges along the northern and southern margins. The VSQ contains the Treuer Member, a less-resistant interbedded siltstone and sandstone. The Vaughan Springs Quartzite unconformably overlies the Arunta Inlier basement and is overlain conformably by carbonate units of the Albinia Formation, which in turn is overlain by the Naburula Formation, the Mount Stuart Formation and the Rinkabeena Shale. These are unconformably overlain by glacial deposits of the Mount Doreen Formation which in turn is overlain by the Yuendumu Sandstone, Walbiri Dolomite, Bloodwood Formation, Djagamara Formation and Kerridy Sandstone (Figure 3). Unconformably overlying these formations is the Carboniferous Mount Eclipse Sandstone (Young *et al*, 1995). The Mount Eclipse Sandstone crops out widely in the Ngalia Basin, has a maximum thickness of more than 3,000m, and hosts the known uranium-vanadium mineralisation.

The Mount Eclipse Sandstone is a medium to coarse-grained feldspathic sandstone, commonly with carbonate cement. Conglomerate, arkose, nodular carbonate and shale are present as lenses. The rocks are dominantly red (oxidised), although restricted zones of light to dark grey (reduced) sandstone are present and mottling is common. Tabular-style uranium-vanadium mineralisation is typically associated with reduced-oxidised (redox) interfaces. The Mt Eclipse Sandstone is unconformably overlain by Cenozoic units in the eastern part of the basin and outcrops mainly along the basin margins in the west where it may be steeply dipping or overturned. The main detrital source for the Mt Eclipse Sandstone is interpreted to be the Carrington Granitic Suite located to the north of the basin (Schmid et al., 2011).

LOCAL GEOLOGY

Little Cone prospect is located within the Patmungala Syncline within a sequence of particularly thick Mt Eclipse Sandstone (Figures 3, 4). The geology of the prospect comprises outcropping Mount Eclipse Sandstone of the basal sequence, which unconformably overlies the Devonian Kerridy Sandstone and the Ordovician Djagamara Formation; the latter typically crops out as silicified, resistant ridges; the Neoproterozoic glaciogene Mt Doreen Formation crops out to the east (Figure 4). The Vaughan Springs Quartzite is absent from this part of the Ngalia Basin.

Central Pacific Minerals Ltd (CPM) divided Mount Eclipse Sandstone in the prospect area into five stratigraphic units (Unit 1-5) and described the outcrops as moderately weathered with common limonitisation and bleaching; arkosic sandstones dominate and are more susceptible to a deep weathering with K-feldspar converted to kaolinitic clay stained with limonite. A basal conglomerate unit crops out above the Kerridy Sandstone contact. Slightly anomalous radioactivity at the Little Cone prospect occurs within bleached sandstone at a similar stratigraphic level to mineralisation found at the Dingo's Rest prospect to the south (Figure 4).

PREVIOUS EXPLORATION

1974: Central Pacific Minerals NL completed an airborne radiometric survey in April 1974 with a follow-up ground check of two anomalies in the Little Cone area taking place in May 1974 (Figure 4; Spark, 1975). A uranium prospective zone of weakly radioactive, bleached sandstone about 3km long was identified (Gardiner, 1974a). In September 1974, three holes (LCRH-1 to -3) were drilled to test the down-dip extension of the bleached zone. In all holes the major units could be correlated with surface geology, however, no fresh rock was encountered and no significant mineralisation was detected with maximum gamma probe measurements of 2-3 times background being recorded (Gardiner, 1974b). Petrographic descriptions of ten rock samples were undertaken.

1978: A geological map at 1:25,000 scale of the Patmungala Syncline including the Little Cone prospect area was completed by Afmeco who explored EL1662 in the late 1970s (Rippert et al., 1979; Figure 5). Afmeco subdivided the Mt Eclipse Sandstone into a number of sub-units with most mineralisation in the original mapping area, which included the Dingos Rest prospect to the south, occurring near the interface of units 2 and 3 (Figure 5).

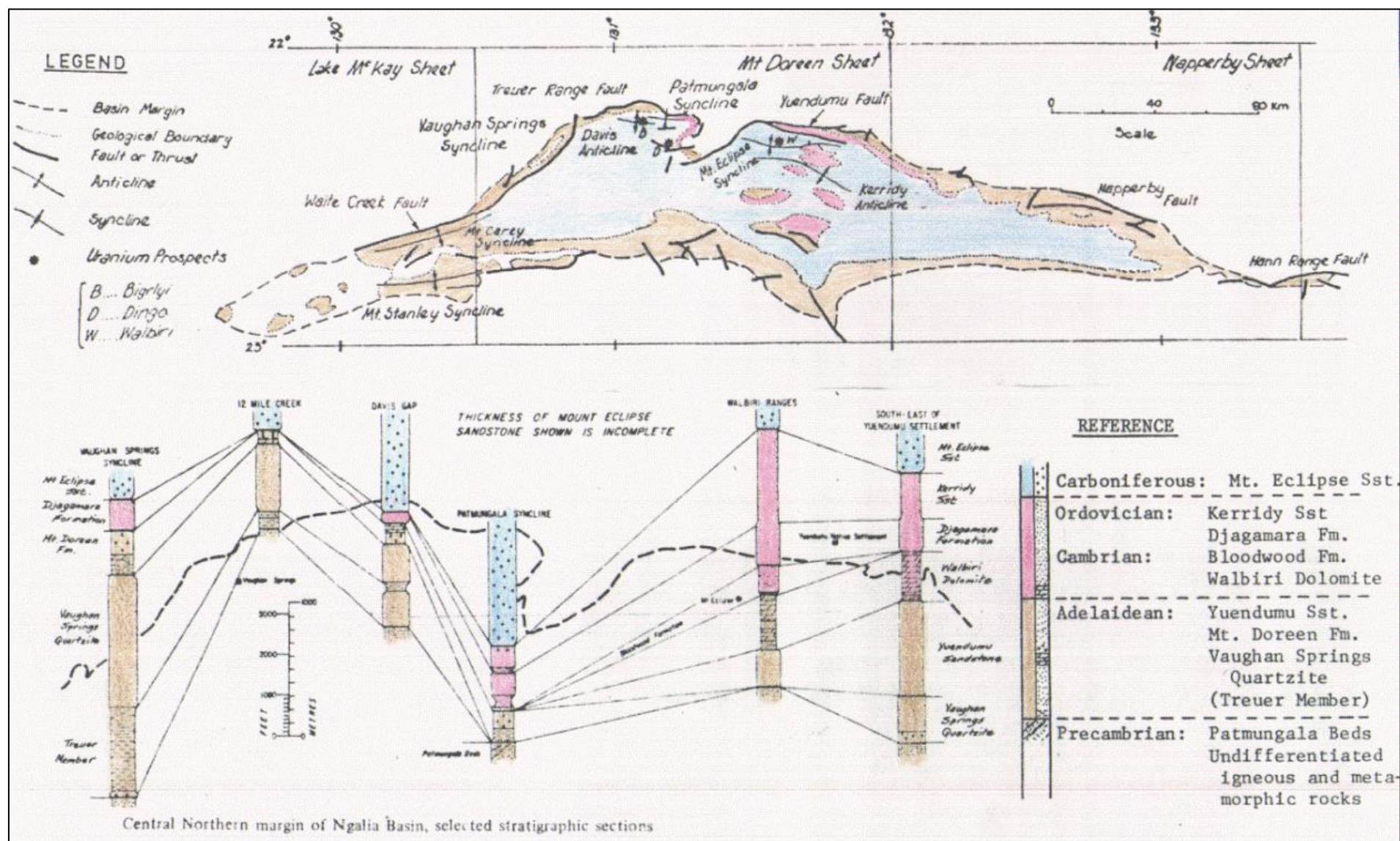


Figure 3: Structure and solid geology with selected stratigraphic sections through the Ngalia Basin (from Rippert *et al*, 1979).

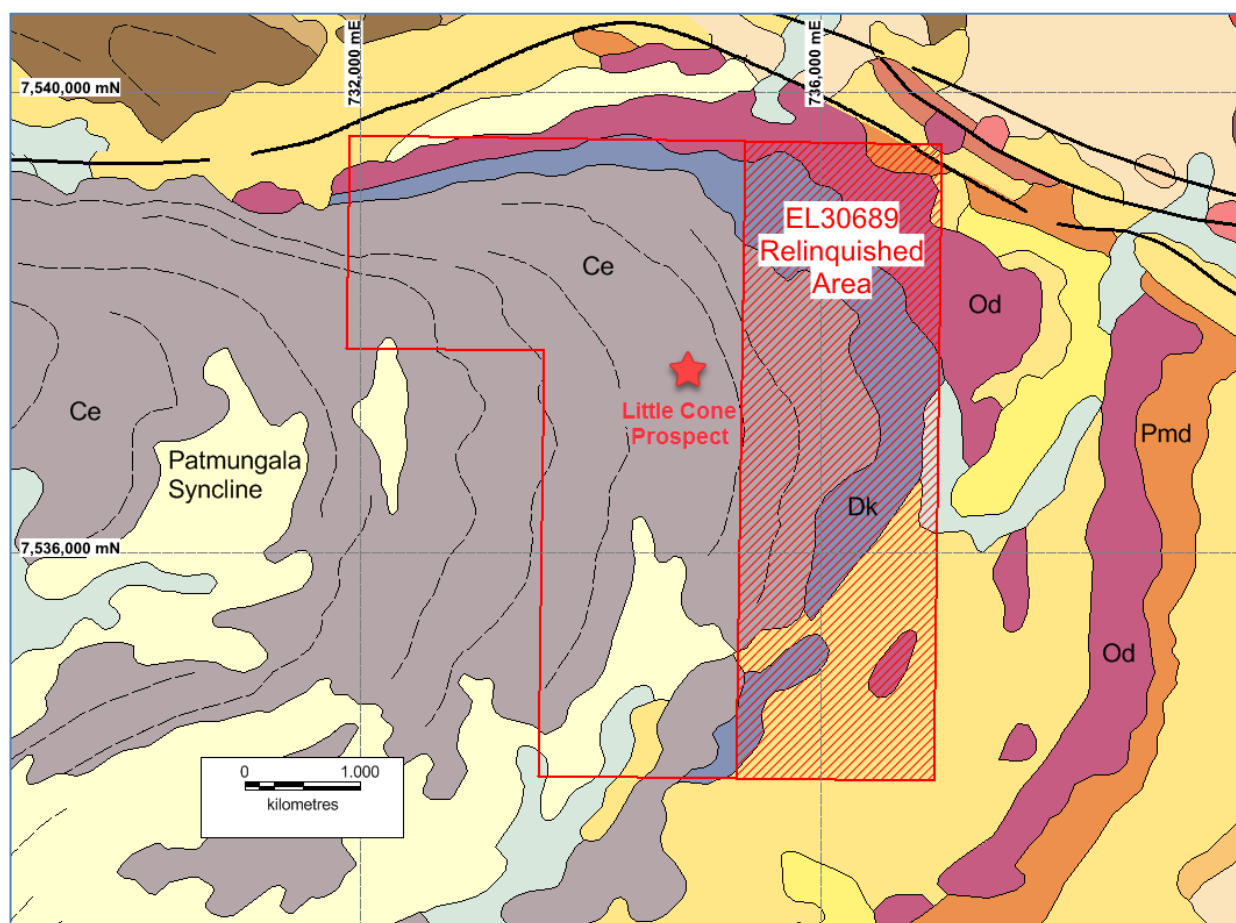


Figure 4: Geological Map of the Patmungala Syncline area (Mt Doreen 1:250K map-sheet) showing location of the Little Cone Prospect. EL30689 tenement outline in red; hatched area shows relinquished blocks. Ce = Mt Eclipse Sandstone; Dk = Kerridy Sandstone; Od = Djagamara Formation; Pmd = Mt Doreen Formation.

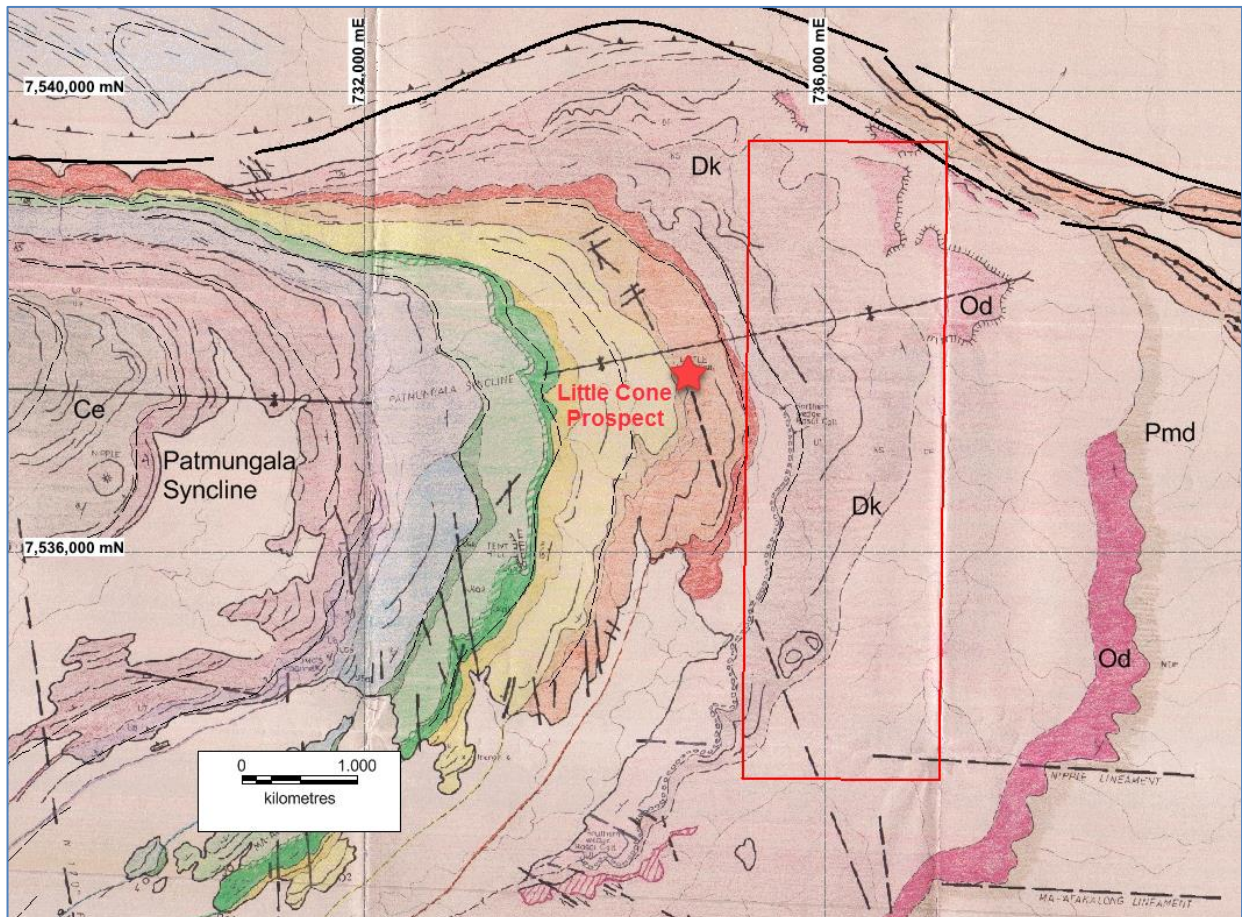


Figure 5: Geological Map of the Patmungala Syncline prepared by Afmeco in 1978 (Rippert et al., 1979); location of the Little Cone prospect shown. Afmeco subdivided the Mt Eclipse Sandstone into a number of sub-units with most mineralisation occurring near the interface of units 2 (orange colours) and 3 (yellow colours). A band of Mt Eclipse Sandstone basal conglomerate was mapped in the EL30689 surrender area. Ce = Mt Eclipse Sandstone; Dk = Kerridy Sandstone; Od = Djagamara Formation; Pmd = Mt Doreen Formation. Red polygon = surrender area.

WORK COMPLETED BY ENERGY METALS LTD JULY 2015 – MARCH 2016

Following a project review, which indicated that a significant part of the tenement included non-prospective Kerridy Sandstone and Djagamara Formation, it was recommended that the eastern three blocks be relinquished (Figure 6); the partial surrender was completed on 24 March 2017. Exploration work on the surrendered ground during the tenure period was limited to review of geophysical datasets, in particular radiometric data, and compilation of historical mapping results as shown in Figure 5 above.

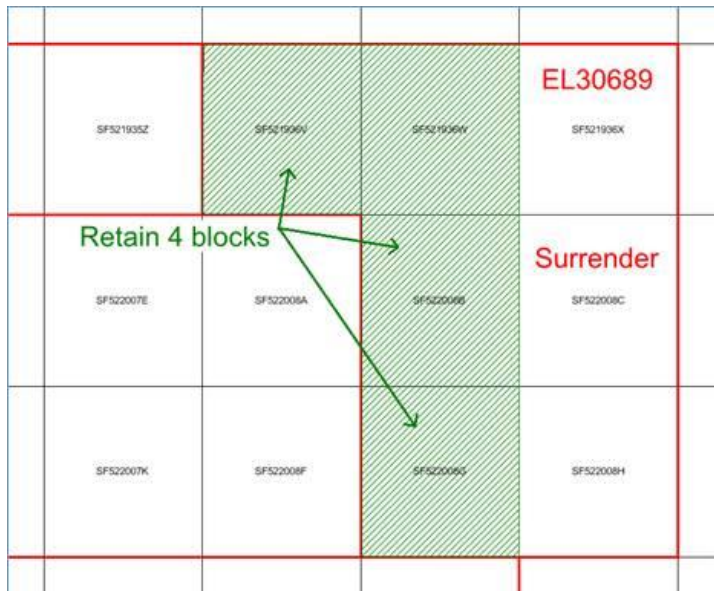


Figure 6: EL30689 tenement map showing blocks surrendered and those retained (green hatch).

Geophysics

Available historical geophysical data were reprocessed and stitched to create regional mosaic geophysical imagery covering EL30689 and surrounding areas. The survey data and imagery has been previously submitted to the Department in the *Group Annual Report, GR070-09_2015_GA_01 Ngalia Regional Project, Period Ending 6th February, 2015*.

Since there is relatively good outcrop over EL30689, the radiometric imagery is of relevance to geological interpretations and anomaly targeting.

Figure 7 shows the ternary radiometric K-Th-U RGB imagery over the surrender area. The main features are the potassic (red) signature associated with the Kerridy Sandstone (presumably due to K-feldspar and/or potassic clays), and the mostly thorium-dominated (green) signature associated with the Mt Eclipse Sandstone, which likely reflects ferruginous weathering. The different units within the Mt Eclipse Sandstone appear to have somewhat different radiometric signatures. The Djagamara Formation has a weak radiometric signature presumably related to silicification.

Figure 8 shows the uranium channel radiometric image; there are no significant anomalies over the relinquished ground

Digital Data

No digital data was generated for the surrendered blocks.

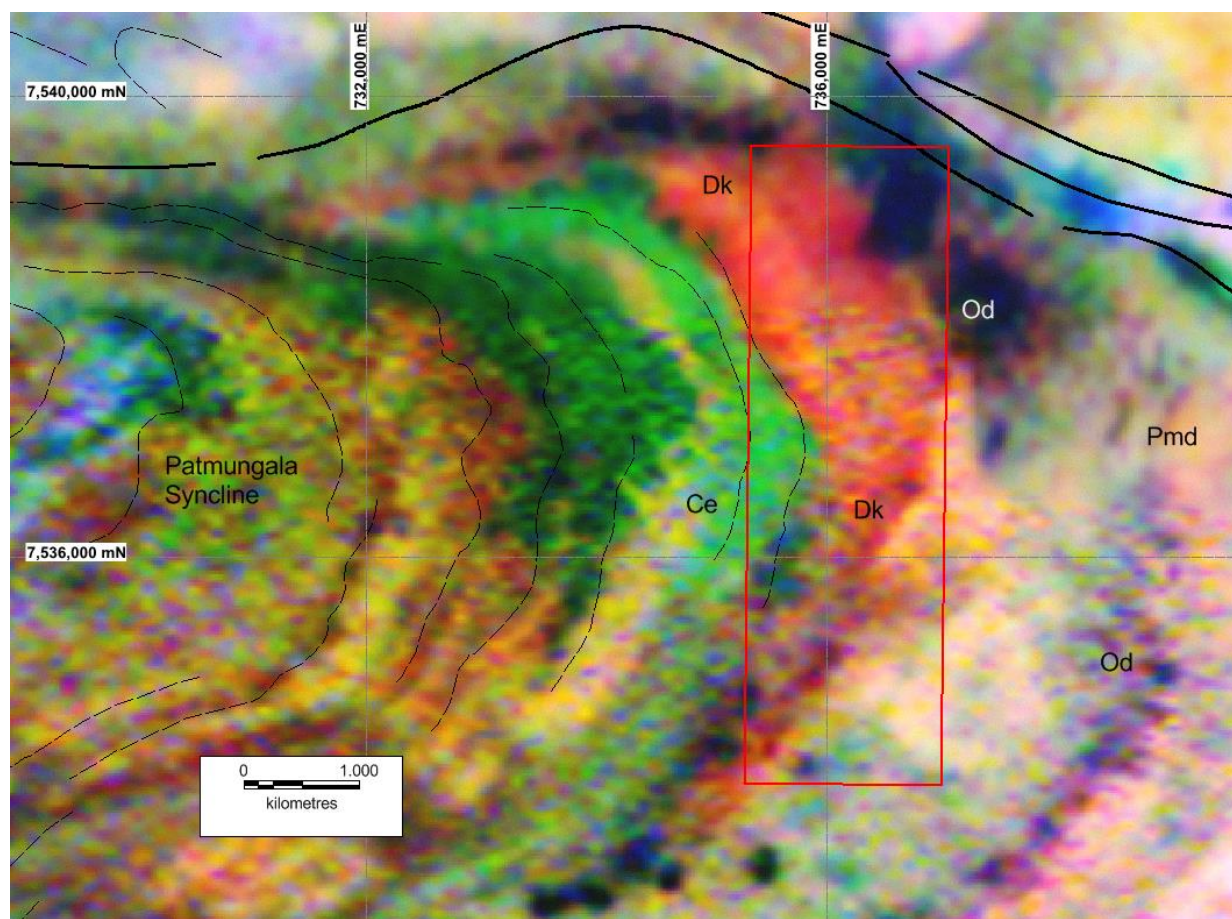


Figure 7: Ternary radiometric K-Th-U RGB imagery showing surrender area (red polygon). The main features are the potassic (red) signature associated with the Kerridy Sandstone, and the mostly thorium dominated (green) signature associated with the Mt Eclipse Sandstone which likely reflects ferruginous weathering. Ce = Mt Eclipse Sandstone; Dk = Kerridy Sandstone; Od = Djagamara Formation; Pmd = Mt Doreen Formation.

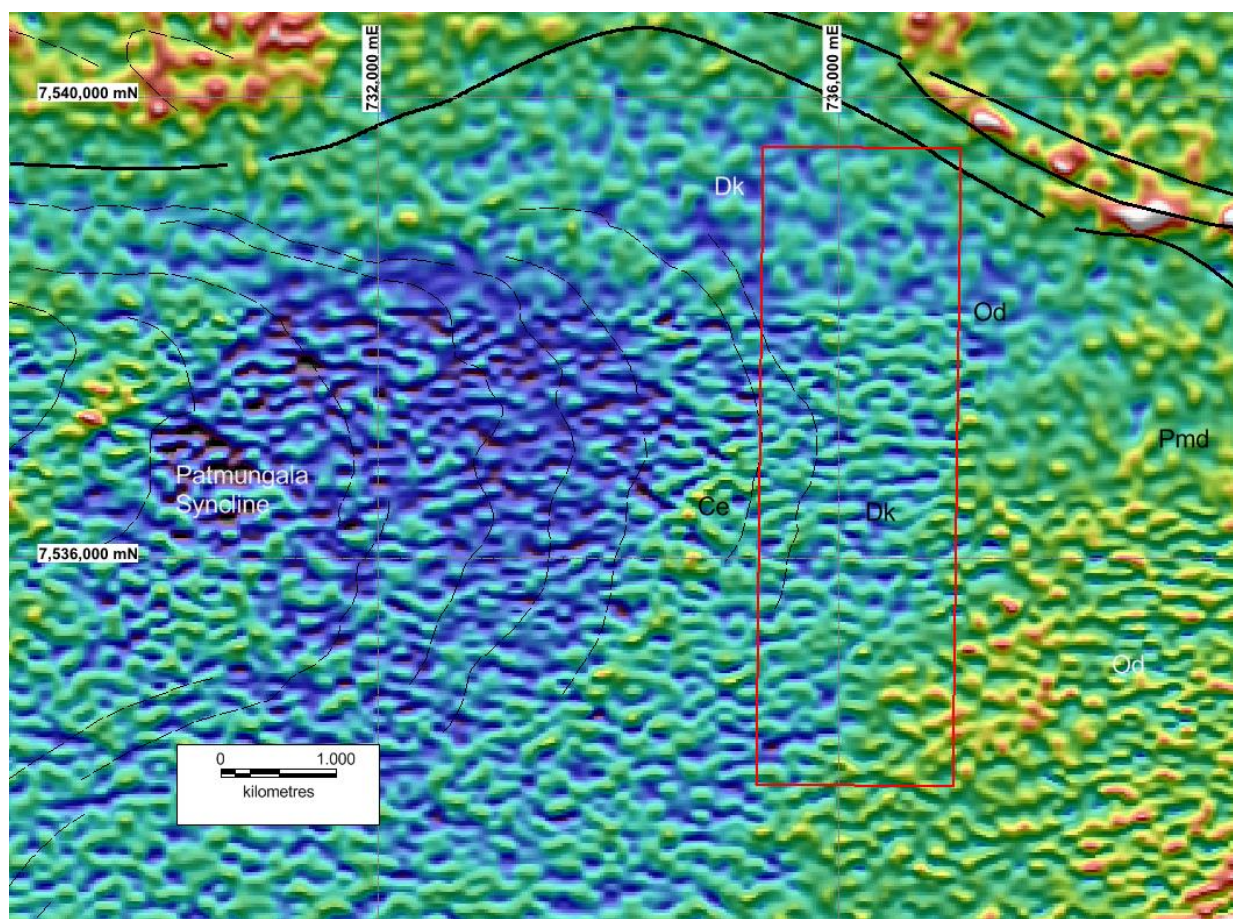


Figure 8: Uranium channel radiometric image showing the absence of significant anomalies over the relinquished ground (red polygon).

CONCLUSIONS

The eastern three blocks of EL30689 were judged to be non-prospective for uranium due to the dominant outcrop of Kerridy Sandstone and Djagamara Formation, and the poor radiometric response of these units. These blocks were voluntarily surrendered in March 2017.

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