

**EL 26073**  
**ANNUAL TECHNICAL REPORT**  
**2<sup>nd</sup> April 2009 – 1<sup>st</sup> April 2010**

**Title Holder:** Diamantina Uranium Pty. Ltd.

**Tenement Manager:** Adam O'Connor, Mining Titles Consultant, Hetherington Exploration & Mining Title Services Pty. Ltd.

**Author:** Paul Byrne

**Target Commodities:** Uranium, Diamonds

**Report Date:** July 2010

**Datum Zone:** GDA94, Zone 53

**1:250,000 mapsheet:** Tanumbirini SE5302

**1:100,000 mapsheets:** Arnold River (5765), Nutwood (5766), Tanumbirini (5865) and Cox (5866)

**Contact for Technical and Expenditure Details:** Adam O'Connor, Mining Titles Consultant, Hetherington Exploration & Mining Title Services Pty. Ltd., Level 1, 503 Willoughby Rd, Willoughby N.S.W. 2068; PO Box 765, Willoughby N.S.W. 2068; Tel: 02 9967 4844, Fax: 02 9967 4614, adam@hemts.com.au

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**Executive Summary**

EL 26073, held by Diamantina Uranium Pty. Ltd., comprises part of the Dunmarra Basin Project that also includes EL 26072, EL 26114, EL 26115, ELA 26099 and ELA 26113 (Figure 3). The area encompassed by the EL 26073 is considered to have potential to host uranium and diamond mineralisation.

Principal commodities sought are uranium and diamonds. Past exploration has comprised heavy mineral sampling for kimberlitic indicator minerals and testing of magnetic and gravity anomalies for kimberlite pipes. Microdiamonds have been found in a portion of the area occupied by EL 26073, however Legend International Holdings (CR2008-0919) concluded they have originated from kimberlitic source rock(s) of considerable distance to the south of the tenement.

Activities included literature searches and data base compilation. Open file company reports were obtained from the Northern Territory Geological Survey and a review of past exploration data and geological concepts undertaken. Airphoto interpretation has identified geological and structural features for ground reconnaissance. During the term Diamantina Uranium Pty. Ltd. also negotiated the purchase of private company exploration reports.

Exploration conducted by Kratos Uranium N. L. in the hinterland of EL 26073 indicates the potential of this area to host economic uranium deposits. Kratos noted that many anomalies identified by aeromagnetic surveys were attributed to the 'black soil type'. The source of the radioactive nuclides was traced to spring water originating from depth and flowing through a leached oxidized zone at the base of the Corcoran Formation. Kratos concluded that radioactive spring water deposits in the region may be derived from a relatively concentrated parent uranium source at depth.

**Proposed Exploration Program**

EL 26073 represents a greenfields exploration play for principally uranium deposits of varying genetic styles. Diamantina Uranium Pty. Ltd. has developed exploration concepts based on specific geological criteria considered as important for controlling the localisation and upgrading of uranium mineralisation.

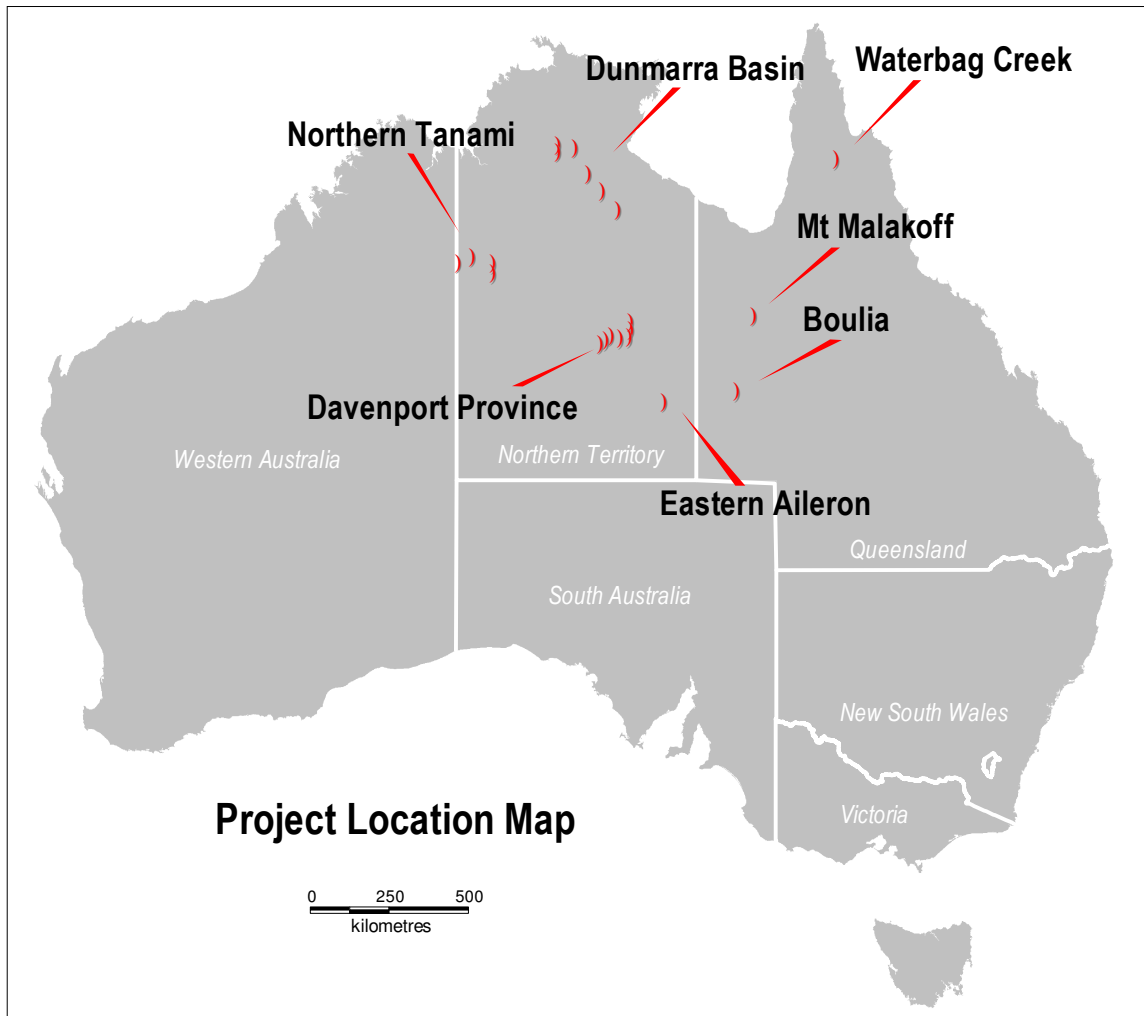
Diamantina Uranium Pty. Ltd. has designed a detailed exploration program to test conceptual uranium mineralisation models. The exploration program will initially involve a GIS compilation of previous exploration and interpretation of regional-scale airborne magnetic and radiometric data. Priority areas will be explored using various methods that may include photo geological studies and geological mapping, geochemical sampling (rock, stream, soil, RAB/bedrock drilling) and low-level airborne (radiometric and magnetic) and ground geophysical surveys such as radiometric and radon emission (alpha-track etch), and possibly IP surveys. Promising geochemical and geophysical responses will be tested by drilling and downhole geophysics. In addition to uranium, other mineral deposits including diamonds and Ni-Cu-PGE sulphides will be sought.

## **Uranium Exploration Potential - Northern Territory**

Uranium production and current resource statistics for the Northern Territory are dominated by large unconformity-related deposits in the eastern Pine Creek Orogen. Smaller vein-type deposits in the Pine Creek Orogen (Adelaide River) have also been mined in the past. Geological analogues to Pine Creek Orogen unconformity-related deposits, that could be considered prospective, exist in the Davenport Province. Platform-cover successions represented by the Hatches Creek Group are correlatives of the Katherine River and Tolmer Groups that are both considered to be important in the formation of unconformity-related deposits in the Pine Creek Orogen.

Diamantina Uranium Pty. Ltd., in association with affiliated companies (Frontier Uranium Pty. Ltd. and Spinifex Uranium Pty. Ltd), has selected several regions in the Northern Territory (Figure 1) to test conceptual uranium mineralisation models. There has been little previous exploration for uranium in these project areas. However, in the last ten years, the Northern Territory and Commonwealth Governments have funded geological studies and regional geophysical surveys that have provided an improved understanding of metallogenic provinces and airborne radiometric and magnetic coverage. This new data has enabled the selection of potential areas for sandstone-hosted uranium deposits that may include roll-front, tabular and tectonic/lithologic deposits. Sandstone-hosted uranium deposits occur in Palaeozoic (Devonian–Carboniferous) continental red-bed sedimentary successions in the Ngalia and Amadeus Basins. Uranium mineralisation occurs at a redox boundary that formed either by flushing oxidising groundwater through reduced sandstone beds (Amadeus Basin deposits), or by interaction with detrital organic matter (Ngalia Basin deposits). Angela, in the Amadeus Basin, is the largest deposit of this type and contains 10,250 tonnes  $U_3O_8$  grading 0.1%  $U_3O_8$ .

In the Northern Territory, economic sandstone-hosted uranium deposits have not been found outside the Ngalia or the Amadeus Basins. However, there is increasing evidence suggesting other basins, such as the Eromanga and Dunmarra Basins have similar potential. There has been little previous exploration for uranium in the Dunmarra Basin. As well, the proximity of uranium-enriched source rocks to Dunmarra Basin sandstone units suggests the potential for sandstone-hosted uranium deposits.



**Figure 1: Location of the Dunmarra Basin Project comprising EL 26073, EL 26072, EL 26114, EL 26115, ELA 26099 and ELA 26113. Also depicted are sites of additional uranium exploration programs held by companies affiliated with Diamantina Uranium Pty. Ltd.**

## Tenement Details

### Exploration Licences 26073

**Holder:** Diamantina Uranium Pty. Ltd. 100%, C/O Adam O'Connor, Mining Titles Consultant, Hetherington Exploration & Mining Title Services Pty. Ltd., Level 1, 503 Willoughby Rd, Willoughby N.S.W. 2068; PO Box 765, Willoughby N.S.W. 2068; Tel: 02 9967 4844, Fax: 02 9967 4614, adam@hemts.com.au

EL 26073 was granted on the 2<sup>nd</sup> April 2008 for a Period of 5 Years.

<b>Exploration Licence 26073</b>	
<b>Holder</b>	Diamantina Uranium Pty. Ltd.
<b>Granted</b>	2 <sup>nd</sup> April 2008
<b>Expiry Date</b>	1 <sup>st</sup> April 2013
<b>Area</b>	299 SBKS, 970 square kilometres

**Table 1: EL 26073, Tenement Details**

## Location (Figure 2)

EL 26073 encompasses portions of Tanumbirini SE5302 1:250,000 mapsheet and the Arnold River (5765), Nutwood (5766), Tanumbirini (5865) and Cox (5866) 1:100,000 map sheets.

The upper north-west corner of EL 26073 is located approximately 290 kilometres due south-east of Katherine.

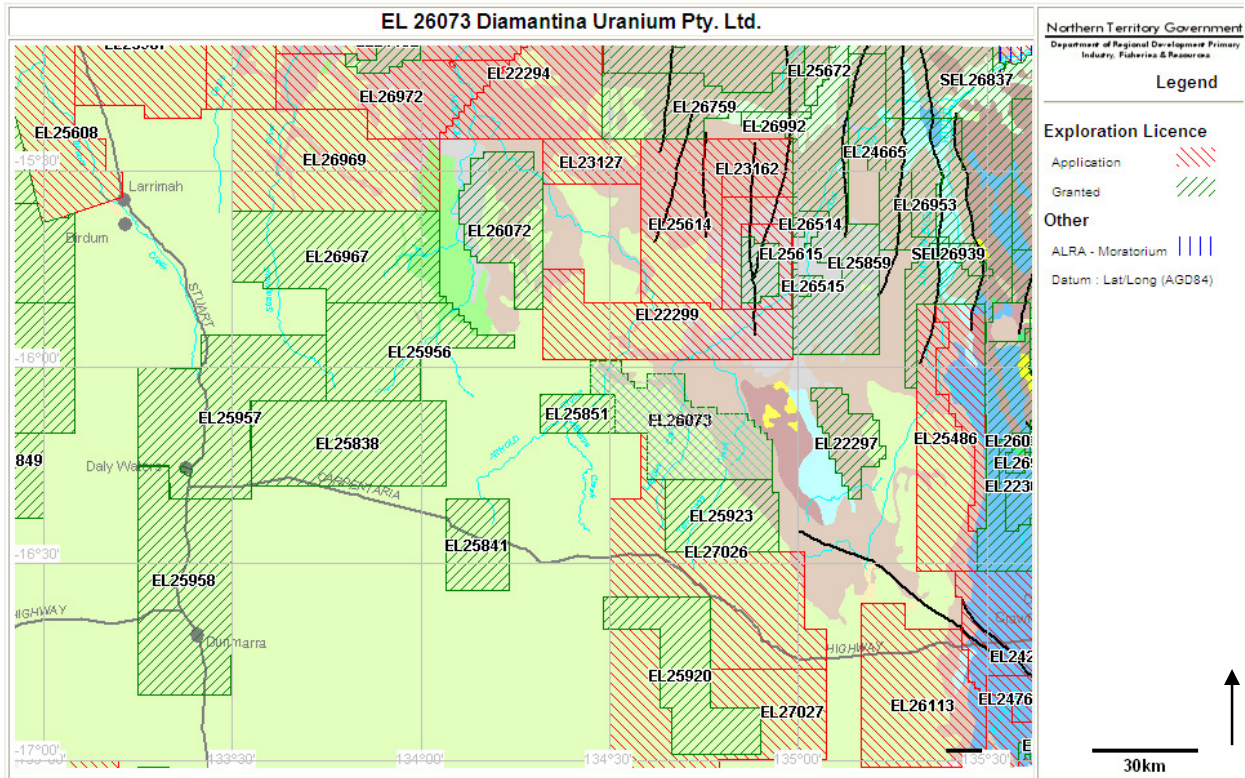


Figure 2: Regional Location EL 26073, east of Daly Waters (GDA94). Geological Key Figure 5

## Regional Geology (primarily after Bowyer & Washburn , CR2005-0525 and White, CR2008-0919)

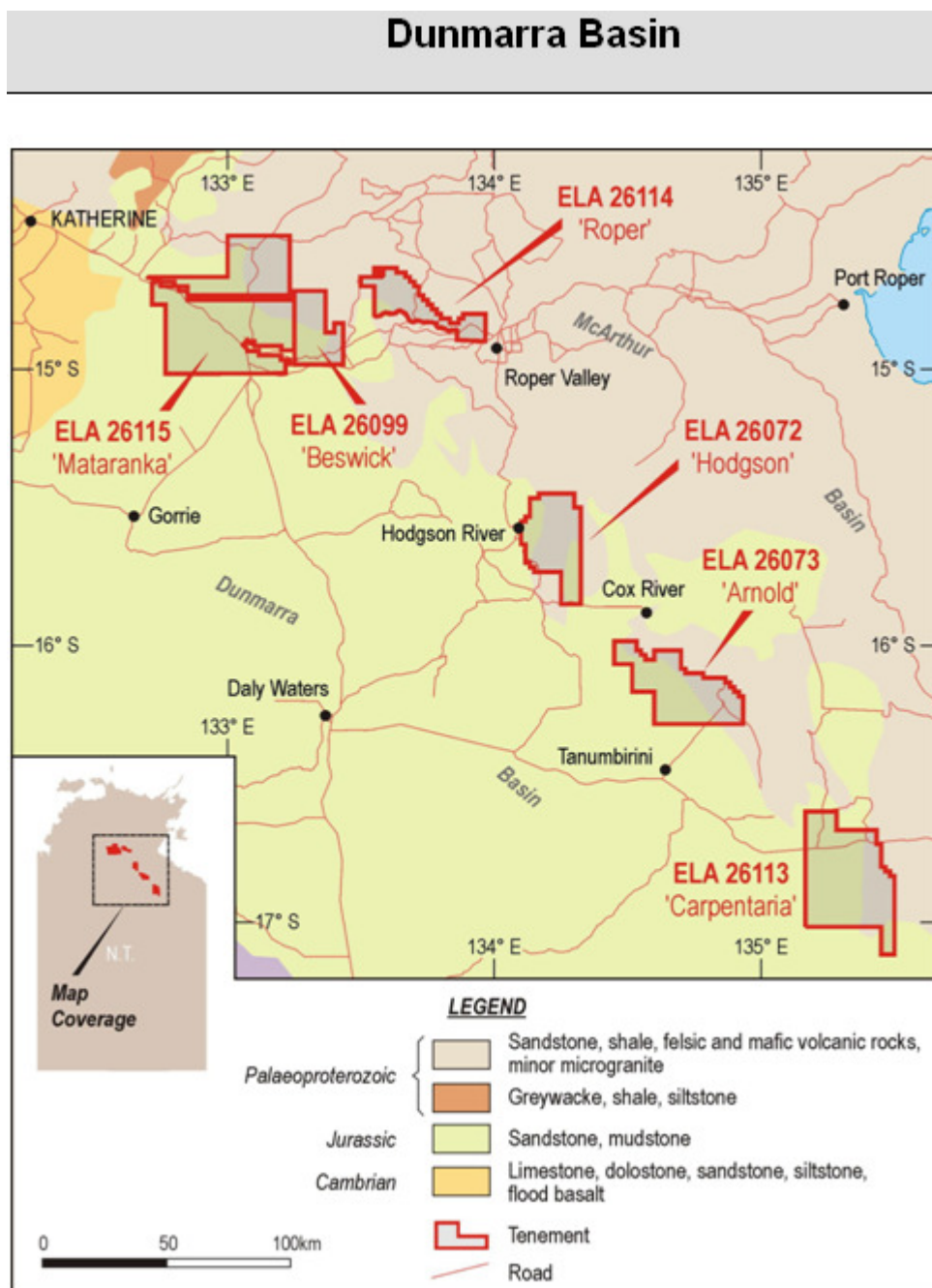
The prospectivity for uranium in the Northern Territory has previously been reviewed under 'Uranium Exploration Potential - Northern Territory'.

All the economic diamond deposits and other significantly diamondiferous occurrences in Australia are located in the North Australian Craton (NAC). The NAC underlies the Kimberly region in northern Western Australia, the northern two thirds of the Northern Territory and the north-western part of Queensland. It is also host to many significant base metal, gold and uranium deposits. The NAC was formed at about 1,850 millions years (Ma) during the Barramundi Orogeny by the amalgamation of the Archaean and early Proterozoic rocks that now form the basement rocks of the NAC. Proterozoic (1820-1600 Ma) platform cover sediments, Palaeozoic volcanics and sediments, and Mesozoic sediments cover these basement rocks. The Palaeozoic volcanics comprise the Lower Cambrian Antrim Plateau Volcanics (about 500 Ma in age) and its equivalents. The only volcanic activity that has occurred on the NAC for the past 500 Ma has been intrusion of diamondiferous kimberlite at 367 Ma (Devonian, Merlin Kimberlite field), 179 Ma (Jurassic, Timber Creek Kimberlite field) and the 25 Ma (Tertiary) lamproite field in the Ellendale (West Kimberley) area.

The large time span of intrusive diamondiferous activity makes the NAC very prospective for diamond exploration and indicates diamonds have been preserved in the lithosphere below the NAC and that eruptions of the diamond-bearing volcanic rocks can occur at any time during the last 500 Ma. It is expected that kimberlites would occur in the central parts of the NAC and lamproites would be favoured in the marginal areas and in cross-cutting Proterozoic mobile zones.

The kimberlites and lamproites of the NAC tend to occur along major north-west and north-east trending structures. These structures can be seen in the gravity data crossing the NAC and have strike lengths of many hundreds of kilometres. These structures are interpreted to be fundamental fractures in the NAC and are potential channel ways for diamondiferous intrusives.

The Cambrian Antrim flood basalt and their correlatives (the Peaker Piker, Helen Springs, Nutwood and Colless Volcanics) crop out over a large area along the Western Australia and Northern Territory border and extend to the east across the Northern Territory into the western-most part of Queensland. They underlie the Palaeozoic sedimentary successions of the Ord, Bonaparte, Wiso, Daly River and Georgina Basins. The Antrim pile consists predominantly of massive basalt lava flows with minor units of flow breccia and agglomerate. The basalts form a poorly known continental flood basalt (CFB), now called the Kalkarinji CFB Province that has been dated at  $505 \pm 2$  Ma. The depleted base metal component of the basalts could have potentially trapped sulphide cumulates in flow-through style feeder systems, similar to proposed models for the rich Noril'sk Ni-Cu-PGE deposits in Siberia.



**Figure 3: Regional Geology EL 26073 and associated tenements**





Figure 4: Satellite Image, Regional Geology. Pin marks approximate centre of EL 26073 (16°10'00.00\"/>

### Local Geology

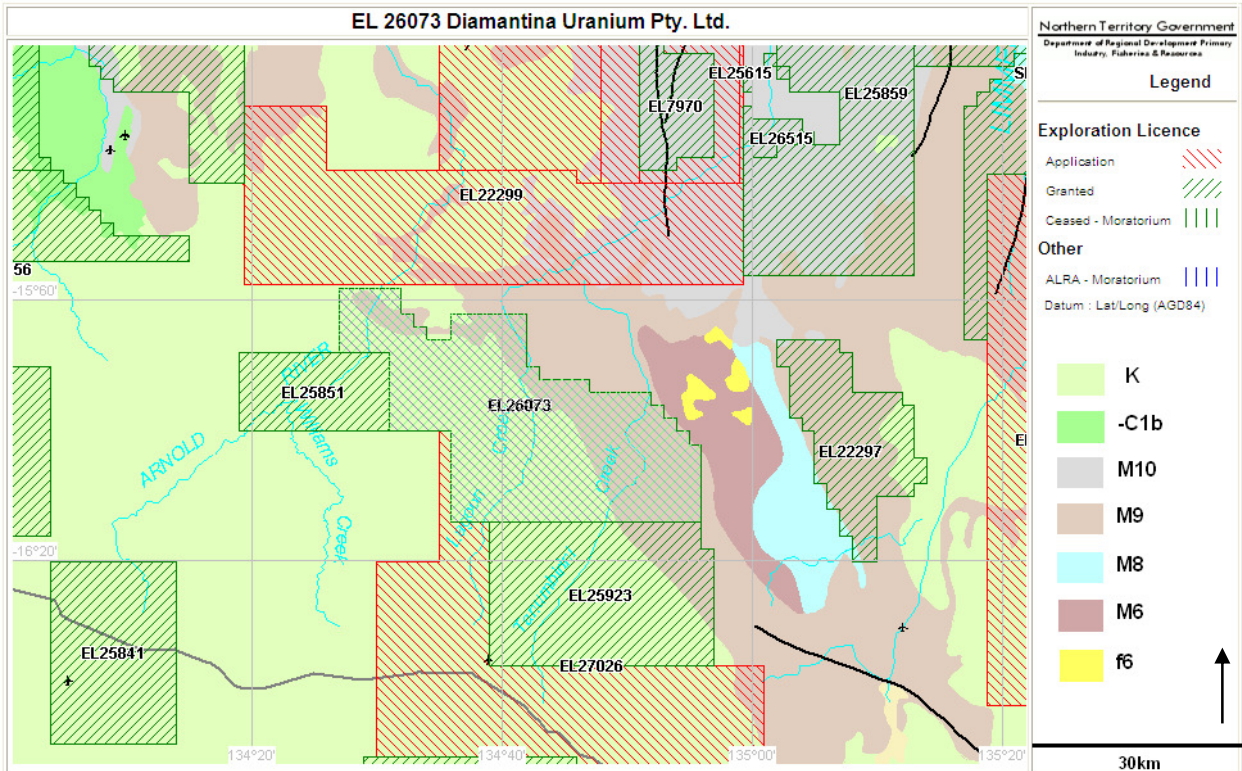


Figure 5: Local Geology EL 26073



## Key, Geological Map

<b>Symbol</b>	K
<b>Geological Region</b>	Dumarra
<b>Lithological Class</b>	Sedimentary
<b>Eon</b>	Phanerozoic
<b>Era</b>	Mesozoic
<b>Period</b>	Cretaceous
<b>Period NTGS</b>	Not applicable
<b>Age Interval</b>	141 to 65 Ma
<b>Rep. Stratigraphic Units</b>	
<b>Lithological Description</b>	Mudstone, shale

<b>Symbol</b>	-C1b
<b>Geological Region</b>	Dunmarra
<b>Lithological Class</b>	Mafic Volcanic
<b>Eon</b>	Phanerozoic
<b>Era</b>	Palaeozoic
<b>Period</b>	Cambrian
<b>Period NTGS</b>	Not applicable
<b>Age Interval</b>	543-509Ma
<b>Rep. Stratigraphic Units</b>	
<b>Lithological Description</b>	Flood Basalt

<b>Symbol</b>	M10
<b>Geological Region</b>	Dunmarra
<b>Lithological Class</b>	Sedimentary
<b>Eon</b>	Proterozoic
<b>Era</b>	Neoproterozoic
<b>Period</b>	
<b>Period NTGS</b>	-P10
<b>Age Interval</b>	1000 to 545 Ma
<b>Rep. Stratigraphic Units</b>	Bukalara Sandstone, Wessel Group
<b>Lithological Description</b>	Sandstone, conglomerate, mudstone

<b>Symbol</b>	M9
<b>Geological Region</b>	McArthur
<b>Lithological Class</b>	Sedimentary
<b>Eon</b>	Proterozoic
<b>Era</b>	Mesoproterozoic
<b>Period</b>	Ectasian-Stenian
<b>Period NTGS</b>	-P9
<b>Age Interval</b>	?1500 to 1000 Ma
<b>Rep. Stratigraphic Units</b>	Roper Group
<b>Lithological Description</b>	Sandstone, shale

<b>Symbol</b>	M8
<b>Geological Region</b>	McArthur
<b>Lithological Class</b>	Sedimentary
<b>Eon</b>	Proterozoic
<b>Era</b>	Mesoproterozoic
<b>Period</b>	Calymmian
<b>Period NTGS</b>	-P8
<b>Age Interval</b>	1600 to ?1500 Ma
<b>Rep. Stratigraphic Units</b>	Nathan and Mt Riggs Groups
<b>Lithological Description</b>	Dolostone, Sandstone

<b>Symbol</b>	M6
<b>Geological Region</b>	McArthur
<b>Lithological Class</b>	Sedimentary
<b>Eon</b>	Proterozoic
<b>Era</b>	Palaeoproterozoic
<b>Period</b>	Stratherian
<b>Period NTGS</b>	-P6
<b>Age Interval</b>	1800 to 1700 Ma
<b>Rep. Stratigraphic Units</b>	Parsons Range, Tawallah, and Katherine River Groups
<b>Lithological Description</b>	Sandstone, conglomerate

<b>Symbol</b>	f6
<b>Geological Region</b>	McArthur
<b>Lithological Class</b>	Volcanic
<b>Eon</b>	Proterozoic
<b>Era</b>	Palaeoproterozoic
<b>Period</b>	Stratherian
<b>Period NTGS</b>	-P6
<b>Age Interval</b>	1800 to 1700 Ma
<b>Rep. Stratigraphic Units</b>	
<b>Lithological Description</b>	Felsic volcanics

EL 26073 is situated west of the Merlin diamond field. Cainozoic sediments, including residual soils, sand and alluvium are widely distributed throughout the tenement. The EL includes part of the central western area of the Proterozoic McArthur Basin and the eastern portion of the Dumarra Basin. The Mesozoic Dumarra Basin overlies the Macarthur Basin. The majority of the area is underlain by Mesoproterozoic Roper Group sediments and minor volcanics. Lower Cambrian mafic volcanics (Nutwood Downs Volcanics) lie outside and north-west of the EL. Flat lying Cretaceous sediments unconformably overly the Proterozoic and Palaeozoic rocks. Dolerite sills intrude the Roper Group rocks.

“The Mallapunyah fault is mapped to the south, and other breaks are mapped to the north. One of these passes through the Abner Range area and continues through the Broadmere prospect area within EL’s 22297-98 where macrodiamonds have been recovered in stream sampling. It is also seen to extend into EL 22296.” (Bowyer and Washburn 2005, CR2005-0525). EL 22296 overlapped part of the area now held under EL 26073.

A series of north to north-east trending faults are also mapped within the tenement. The numerous domes and anticlines along these faults suggest mostly strike-slip faulting.

## **Summary of Some Previous Exploration Relevant to EL 26073, derived from Northern Territory Geological Survey open file data**

**Report No:** CR1997-0040

**Title:** Partial relinquishment report on EL 8451 (Arnold) for the period 20-10-1994 to 19-10-1996

**Author:** Price, AT / Normandy Exploration

**Tenure:** EL 8451

**Province:** McArthur Basin / Daly Basin

**Stratigraphy:** Tindall Limestone / Antrim Plateau Volcanics / Bukalara Sandstone

**Map Sheet:** Tanumbirini SE5302 / Arnold River 5765

EL 8451, held by Normandy Exploration Limited, was situated due west of EL 26072. Normandy Exploration applied for EL 8451 to target base metal mineralisation in the Middle Proterozoic Roper Group. Exploration carried out on land relinquished within EL 8451 included an airborne magnetic and radiometric survey and compilation of open file data.

Petroleum well data released on open file revealed that the depth of Cambrian cover is in excess of 150 metres over much of the licence area. As a result the licence much of the licence was relinquished.

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**Report No:** CR1996-0858

**Title:** Annual report Exploration Licence 7829, Marmbulligan 27-10-1995 to 26-10-1996 Author: Rogers, T / Kintaro Gold Mines

**Tenure:** EL 7829

**Province:** McArthur Basin

**Map Sheet:** Tanumbirini SE5302 / Bauhinia Downs SE5303 / Tanumbirini 5865 / Bauhinia Downs 5965

A portion of EL 7829, held by Kintaro Gold Mines Pty. Ltd., overlapped with EL 26073. Ashton Mining, under a joint venture agreement, undertook stream gravel sampling. A total of 15 stream samples were collected and analysed at Ashton's Perth laboratory for diamond and kimberlitic indicator minerals. 12 samples returned negative results and 3 were awaiting results at time of reporting. Results were discouraging and Ashton Mining pulled out of joint venture.

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**Report No:** CR1996-0742

**Title:** Final report EL 8083, OT Downs 12-07-1993 to 14-06-1996

**Author:** Ashton Mining

**Tenure:** EL 8083

**Province:** McArthur Basin

**Map Sheet:** Bauhinia Downs SE5303 / Tanumbirini SE5302 / October 5864 / OT Downs 5964 / Bauhinia Downs 5965

EL 8083, held by Ashton Mining Limited, was situated due south-east of EL 26073. Ashton Mining undertook a data review and two gravel/loam sampling programs. A total of 2 loam and 33 gravel samples were collected in the licence area as it existed just prior to surrender. 2 gravel and 1 loam sample were positive, each containing a single microdiamond.

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**Report No:** CR1995-0840

**Title:** Annual report EL 7829 27-10-1994 to 28-10-1995

**Author:** Ong, N / Kintaro Gold Mines

**Tenure:** EL 7829

**Province:** McArthur Basin

**Map Sheet:** Tanumbirini SE5302 / Bauhinia Downs SE5303 / **Tanumbirini** 5865 / Bauhinia Downs 5965

A portion of EL 7829, held by Kintaro Gold Mines Pty. Ltd., overlapped with EL 26073. Ashton Mining Limited, under joint venture, collected of 3 stream sediment samples, 1 bulk sample and 3 RAB holes. Samples were analysed at Ashton's Perth laboratory and all returned negative results.

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**Report No:** CR1995-0752

**Title:** Relinquishment report EL 8083, 12-07-1993 to 11-07-1995

**Author:** Ong, N / Ashton Mining

**Tenure:** EL 8083

**Province:** McArthur Basin

**Map Sheet:** Bauhinia Downs SE5303 / **Tanumbirini** SE5302 / Bauhinia Downs 5965 / OT Downs 5964 / October 5864

EL 8083, held by Ashton Mining Limited, was situated due south-east of EL 26073. Ashton's exploration program consisted of regional reconnaissance stream sampling. A total of 15 samples were collected within a portion of the EL that was relinquished. Samples were analysed at Ashton's Perth laboratory for microdiamond and kimberlitic indicator minerals. All samples reported negative results.

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**Report No:** CR1995-0599

**Title:** Annual report, EL 8085 12th July 1994 to 11th July 1995

**Author:** Ong, N / Ashton Mining / Australian Diamond Exploration

**Tenure:** EL 8085

**Map Sheet:** **Tanumbirini** SE5302 / **Tanumbirini** 5865

EL 8085, held by Ashton Mining Limited, overlapped with EL 26073. Ashton's exploration program consisted of regional reconnaissance stream sampling. 28 samples were collected but result not available at time of reporting.

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**Report No:** CR1995-0598

**Title:** Annual report, exploration licence 8083 12th July 1994 to 11th July 1995

**Author:** Ong, N / Ashton Mining / Australian Diamond Exploration

**Tenure:** EL 8083

**Province:** McArthur Basin

**Map Sheet:** Bauhinia Downs SE5303 / **Tanumbirini** SE5302 / OT Downs 5964 / Bauhinia Downs 5965 / October 5864

EL 8083, held by Ashton Mining Limited, was situated due south-east of EL 26073. Ashton's exploration program consisted of regional reconnaissance stream sampling. A total of 26 samples were collected within the tenement and forwarded to Ashton's Perth laboratory for analyses for microdiamond and kimberlitic indicator minerals. No results were available at time of reporting.

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**Report No:** CR1995-0520

**Title:** EL 8120 Gravel Creek, EL 8121 Relief Creek, EL 8123 Yaroo Creek final report for period ending 18-04-1995

**Author:** Bisset, AT / Louwrens, DJ / CRA Exploration

**Tenure:** EL 8120 / EL 8121 / EL 8123

**Province:** McArthur Basin

**Stratigraphy:** Hodgson Sandstone Member

**Map Sheet:** Tanumbirini SE5302 / Bauhinia Downs SE5303 / Wallhallow SE5307 / **Tanumbirini** 5865 / October 5864 / Amungee Mungee 5764 / Arnold River 5765 / OT Downs 5964 / Bloodwood Creek 5963

EL 8121, held by CRA Exploration, lay due south of EL 26073. EL 8120 overlapped with EL 26073. In 1993 a detailed airborne magnetic survey was completed over the area. Heli-supported magnetics was undertaken as follow up. Modelling generally indicated a shallow source. 29 loam samples were collected from selected anomalies with one returning 5 chromites of non-kimberlitic origin. Radiometric response outlined a small uranium anomaly in EL8121. This anomaly was associated with a Radon leak. 2 percussion holes were completed to check a dipole anomaly. No significant results were obtained.

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**Report No:** CR1994-0846

**Title:** Annual report EL 7829 27-10-1993 to 26-10-1994

**Author:** Reddicliffe, TH / Kintaro Gold Mines / Ashton Mining / Marmbulligan Joint Venture

**Tenure:** EL 7829

**Province:** McArthur Basin

**Map Sheet:** Tanumbirini SE5302 / Bauhinia Downs SE5303 / **Tanumbirini** 5865 / Bauhinia Downs 5965 / Cox 5866

A portion of EL 7829, held by Kintaro Gold Mines Pty. Ltd., overlapped with EL 26073. Work completed included 21 stream sediment and 49 loam samples plus 100 line km of helimagnetics and EM. The results from the initial stream sediment sampling was encouraging with a number of chromites being recovered. This was followed by loam sampling over the suspected sources of the anomalies. Some microdiamonds were recovered in the follow up loam sampling. 1 sample returning 10 microdiamonds. Follow up repeat sampling did not repeat this value.

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**Report No:** CR1994-0553

**Title:** Annual report EL 8083 12-07-1993 to 11-07-1994

**Author:** Reddicliffe, TH / Ashton Mining

**Tenure:** EL 8083

**Province:** McArthur Basin

**Map Sheet:** Tanumbirini SE5302 / Bauhinia Downs SE5303 / OT Downs 5964 / Hatches 5956 / October 5864

EL 8083, held by Ashton Mining Limited, was situated due south-east of EL 26073. 24 gravel samples were collected from the western half of the licence. A single positive result was obtained returning 1 microdiamond.

**Report No:** CR1995-0751

**Title:** Relinquishment report EL 8085, 12-07-1993 to 11-07-1995

**Author:** Ong, N / Ashton Mining

**Tenure:** EL 8085; **Province:** McArthur Basin; **Map Sheet:** Tanumbirini SE5302 / Tanumbirini 5865;

Part of EL 8085 overlapped with the area currently held under EL 26073. Ashton Mining Limited collected 23 stream sediment samples. Examination proved negative for diamonds or kimberlitic indicator minerals.

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**Report No:** CR1972-0087

**Title:** Uranium exploration, Limmen Bight area, NT 1972

**Author:** Kratos Exploration / Kratos Uranium / Pechiney Australia

**Tenure:** EL 343 / EL 345 / AP 3304 / AP 3322 / AP 2589; **Province:** McArthur Basin

**Stratigraphy:** Corcoran Formation / Hodgson Sandstone Member / Bessie Creek Sandstone; **Map Sheet:** Roper River SD5311 / Mount Young SD5315 / Bauhinia Downs SE5303 / Urapunga SD5310 / Hodgson Downs SD5314 / Roper 5968 / Chapman 5768 / Towns 5967 / Urapunga 5868 / Mount Young 6067 / **Hodgson 5767** / Mantungula 5966 / St. Vidgeon 5867 / Tawallah Range 6066 / Bauhinia Downs 5965 / Batten 6065 / OT Downs 5964

Exploration carried out by Kratos Uranium N. L. was outside the area of encompassed by EL 26073, e.g. anomaly 133L.B. was located 62 kilometres south-east of the approximate centre (Figure 4) of EL 26073. Anomalies identified by aeromagnetic surveys were attributed to the 'black soil type'. The source of the radioactive nuclides was traced to spring water originating from depth and flowing through a leached oxidized zone at the base of the Corcoran Formation. Kratos concluded that radioactive spring water deposits in the region may be derived from a relatively concentrated parent uranium source at depth.

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**Report No:** CR1997-0123

**Title:** Final report EL 7829, Marmbulligan, 01-06-1993 to 13-12-1996

**Author:** Rogers, TC / Marmbulligan Joint Venture / Ashton Mining / Aberfoyle Resources / Australian Diamond Exploration / Kintaro Gold Mines

**Tenure:** EL 7829; **Province:** McArthur Basin; **Map Sheet:** Bauhinia Downs SE5303 / **Tanumbirini** SE5302 / Bauhinia Downs 5965 / **Tanumbirini** 5865

Part of EL 7829 overlapped with the area currently held under EL 26073. Ashton Mining Limited, on behalf of the Australian Diamond Exploration Joint Venture, collected 129 gravel samples. 105 were negative and 4 returned a single microdiamond, with the remainder reporting chromites. Follow-up of the chromite bearing samples failed to verify the initial results. 49 loam samples in total were collected from 3 grids. 1 sample returned a single microdiamond, while a second (sample BAU04770) returned 10 microdiamonds. Resampling of the latter location failed to reproduce the original result. 1 x 50t bulk sample was collected and analysed. Results were negative.

Other work included 3 small helimagnetic surveys (totalling 256 line km) were completed. No targets were identified and 131 line km of DIGITEM were also acquired. 2 small conductors were identified. 3 RAB holes drilled to test conductors returned negative results.

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**Report No:** CR2005-0525

**Title:** Partial relinquishment exploration report for the period 5 February 2003 to 4 February 2005

**Author:** Bowyer, L / Washburn, K / Astro Diamond Mines

**Tenure:** EL 22296; **Province:** McArthur Basin; **Map Sheet:** **Tanumbirini** SE5302 / Bauhinia Downs SE5303 / Bauhinia Downs 5965 / October 5864 / OT Downs 5964 / **Tanumbirini** 5865

The north-western portion of EL 22296 overlapped with the north-eastern portion of EL 26073. The Cox Project, of which EL 22296 was part, covered approximately 8,676.9 square kilometres west of the Merlin diamond field. This report describes exploration work carried out over the partial surrender portion of EL 22296 during the period 5 February 2003 to 4 February 2005. Exploration included acquisition of geological, topographic and geophysical data, GIS compilations and data reviews, and compilation of open file data. The area was selected for exploration based on a regional diamond prospectivity review carried out by Astro Diamonds. Astro reviewed past exploration activity undertaken by Ashton and Rio Tinto in the relinquished area during the 1980's. Astro concluded that the sample density collected for kimberlite indicator minerals was adequate. One sample in the surrendered area contained a microdiamond. No targets were generated from magnetic or Landsat data and the area was relinquished.

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**Report No:** CR2008-0919

**Title:** Final report for EL 22296 Cox Project, for the period 5 February 2003 to 24 November 2008

**Author:** White, B / Legend International Holdings

**Tenure:** EL 22296; **Province:** McArthur Basin; **Stratigraphy:** Roper River granite / Nutwood Downs Volcanics; **Map Sheet:** **Tanumbirini** SE5302 / Hodgson Downs SD5314 / **Tanumbirini** 5865 / Cox 5866

The western half of EL 22296 overlapped with the eastern portion of EL 26073. Previously published reports were reviewed with a focus on past diamond exploration conducted in the area. Of particular interest were reports that described the location of macro and microdiamond occurrences and the presence and nature of diamond indicator minerals. The first phase of exploration consisted of ground verification of previous diamond and indicator results across the Cox Project. The site investigations were focused on Cretaceous sediments within areas identified in the historical reports. Streams that had previously shown anomalous results were resampled and analysed for indicator minerals using microprobe analysis. Several samples were taken across the Cox Project, of which three (3) were sourced from streams within EL 22296. Results from these three (3) samples were not encouraging. Conclusions drawn from the data review indicated that this tenement would not be highly prospective for diamondiferous kimberlites. Microdiamonds found in the region have been interpreted as having originated from kimberlitic source rock(s) of considerable distance to the south of the tenement. Rock chip sampling did not alter this assessment. The lack of indicator minerals and locally sourced micro or macrodiamonds suggests that the potential for the area held under EL 22296 to host kimberlite rocks is low.

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## **Conclusion and Ongoing Exploration**

EL 26073, held by Diamantina Uranium Pty. Ltd., comprises part of the Dunmarra Basin Project that also includes EL 26072, EL 26114, EL 26115, ELA 26099 and ELA 26113. In the Northern Territory, economic sandstone-hosted uranium deposits have not been found outside the Ngalia or the Amadeus Basins. However, there is increasing evidence suggesting other basins, such as the Eromanga and Dunmarra Basins have similar potential. There has been little previous exploration for uranium in the Dunmarra Basin. The proximity of uranium-enriched source rocks to Dunmarra Basin sandstone units suggests the potential for sandstone-hosted uranium deposits. Diamantina Uranium Pty. Ltd. has developed exploration concepts based on specific geological criteria considered as important for controlling the localisation and upgrading of uranium mineralisation.

Work during this term included literature searches and data base compilation. Open file company reports were obtained from the Northern Territory Geological Survey and a review of past exploration data and geological concepts undertaken. Airphoto interpretation has identified geological and structural features for ground reconnaissance. During the term Diamantina Uranium Pty. Ltd. also negotiated the purchase of private company exploration reports. EL 26073 represents a greenfields exploration play for principally uranium deposits of varying genetic styles. The tenement is also considered to have potential to host diamond mineralisation. Past exploration has comprised heavy mineral sampling for kimberlitic indicator minerals and testing of magnetic and gravity anomalies for kimberlite pipes. Microdiamonds have been found in a portion of the area occupied by EL 26073, however Legend International Holdings (CR2008-0919) concluded they have originated from kimberlitic source rock(s) of considerable distance to the south of the tenement.

Diamantina Uranium Pty. Ltd. has designed a detailed exploration program to test conceptual uranium mineralisation models. The exploration program will initially involve a GIS compilation of previous exploration and interpretation of regional-scale airborne magnetic and radiometric data. Priority areas will be explored using various methods that may include photo geological studies and geological mapping, geochemical sampling (rock, stream, soil, RAB/bedrock drilling) and low-level airborne (radiometric and magnetic) and ground geophysical surveys such as radiometric and radon emission (alpha-track etch), and possibly IP surveys. Promising geochemical and geophysical responses will be tested by drilling and downhole geophysics

Exploration conducted by Kratos Uranium N. L. in the hinterland of EL 26073 indicates the potential of this area to host economic uranium deposits. Kratos noted that many anomalies identified by aeromagnetic surveys were attributed to the 'black soil type'. The source of the radioactive nuclides was traced to spring water originating from depth and flowing through a leached oxidized zone at the base of the Corcoran Formation. Kratos concluded that radioactive spring water deposits in the region may be derived from a relatively concentrated parent uranium source at depth.



