



96-98 Outram Street,  
WEST PERTH WA 6005

Phone: (08) 9254 0800  
Fax: (08) 9254 0801

---

## **ANNITOWA PROJECT, NORTHERN TERRITORY.**

### **REVIEW OF PREVIOUS EXPLORATION**

**Submitted by: VALE INCO Australia Limited Partnership  
ACN 096 361 876**

**96-98 Outram Street  
WEST PERTH WA 6005**

**Date: April 2009**

**Distribution: VALE Library**

# **TABLE OF CONTENTS**

1.0 Previous Exploration .....	2
2.0 References .....	10

## **List of Tables**

<i>Table 1: Historic Tenements and Reports Covering Annitowa Applications</i> .....	2
<i>Table 2: Previous Exploration on Annitowa</i> .....	3

## **List of Figures**

Figure 1	Annitowa Location Plan on Historic Tenements
Figure 2	500k Interpreted Geology Plan (1:200,000)

## 1.0 Previous Exploration

A summary of historic tenements and open file reports covering the Annitowa Project is listed in *Table 1*, below. A summary of previous exploration works on the Annitowa Project is included as *Table 2*, below. This table collates historic exploration as outlined in open file mineral exploration reports.

***Table 1: Historic Tenements and Reports Covering Annitowa Applications***

Tenement	Granted	Ceased	Company	Number of Reports	Open File Report Numbers
AP2193	19690410	19700409	Elkedra Diamonds	1	CR1971-0070
EL4589	19840903	19900902	CRA Exploration Pty Ltd	1	CR1985-0271
EL4590	19840903	19900902			
EL4595	19840903	19900902			
EL4601	19840903	19900902			
EL4602	19840903	19900902			
EL4606	19840903	19900902			
EL4603	19840903	19900902	CRA Exploration Pty Ltd	1	CR1985-0272
EL9709	20020123	20060120	Arafura Resources NL	6	CR2005-0008, CR2005-0009, CR2003-0046, CR2004-0056, CR2004-0043, CR2006-0011.
EL22505	20030703	20041008	De Beers Australia Exploration Ltd	2	CR2004-0348, CR2004-0622
EL22509	20020402	20041008	De Beers Australia Exploration Ltd	3	CR2004-0192, CR2003-0131, CR2004-0622
EL22526	20020822	20040916	Elkedra Diamonds	2	CR2004-0617, CR2003-0387
EL22546	20021017	20030917	Elkedra Diamonds	1	CR2003-0377
EL22594	20010830	20021030	Rio Tinto	1	CR2002-0243
EL22783	20020322	20040311		0	-
EL23058	20020125	20020417		0	-
EL23276	20021220	20031009	Elkedra Diamonds	1	CR2003-0376
EL23596	20030221	20040119	Elkedra Diamonds	1	CR2004-0197
EL23597	20030221	20040119	Elkedra Diamonds	1	CR2004-0196

**Table 2: Previous Exploration on Annitowa**

Dates	Company	Commodity	Tenement Numbers	Item Number	Work Completed	Comments
10/04/1969-09/04/1970	Elkedra Diamonds	Diamonds	AP2193	CR1971-0070	IP Survey	IP Profiles at Hatches Creek – Elkedra I.
03/09/1984-02/09/1985	CRA Exploration Pty Ltd	Diamonds	EL4589, EL4590, EL4595, EL4601, EL4602, EL4606	CR1985-0271	Airborne Magnetic / Radiometric Survey Aerial Photography (B&W) Photointerp, Geochem sampling Soil sampling, loam sampling, Rock chip sampling, Ground magnetic surveys.	Photo feature anomaly ledger Photo feature geochemistry ledger Ground magnetic profiles  Orientation airborne magnetic and radiometric surveys over the Lake Nash tenement block indicated the majority of the area was not amenable to detailed aeromags for detecting magnetic diatremes. Photointerp identified 103 anomalous geomorphic features. 69 features were investigated on the ground with 49 soil and loam samples collected. -80 mesh Samples were submitted to CRAE Belmont lab for kimberlitic indicator mineral observations. Three rock chip samples. No significant trace element geochem results were reported. Aeromagnetics not useful in this terrane for diamond exploration.  Note: No P assays, however samples were assayed for U. Highest U assay 6ppm.
1984-16/08/1985	CRA Exploration Pty Ltd	Diamonds	EL4603	CR1985-0272	Airborne Magnetic / Radiometric Survey Aerial Photography (B&W), Photointerp, Geochem sampling Soil sampling, loam sampling,	Orientation airborne magnetic and radiometric surveys over the Lake Nash tenement block indicated the majority of the area was not amenable to detailed aeromags for detecting magnetic diatremes.  Photointerp identified 21 anomalous geomorphic features). 15 features were investigated on the ground and 10 -2mm loam samples and -80 mesh soil samples were collected.  In addition ten -2mm drainage samples were collected on the western half of EL4603. This sampling technique was adopted as the area comprises well drained outcropping Middle Cambrian sediments. -80 mesh Samples were submitted to CRAE Belmont lab for kimberlitic indicator mineral observations.
23/01/2002 – 22/01/2006	Arafura Resources NL	Diamonds, Au, Ni/Cu, Ni/PGE, W	EL9709	CR2006-0011.	Geochem, Soil sampling	396 soil samples collected and assayed. NSA & tenement was surrendered.
03/07/2003-02/07/2004	De Beers Australia Exploration Ltd	Diamonds	EL22505	CR2004-0348	Aero Magnetic Survey	26,273 line km of aeromags over Aljawarra Project & 3221 line km over EL22505. 5 Aircore holes for 278 m drilled by Wallis Drilling to test magnetic anomalies. Anomalism attributed to palaeodrainage. One of these holes, ELK065 falls within the Annitowa Tenement 5 application area.
02/04/2002-01/04/2004	De Beers Australia Exploration Ltd	Diamonds	EL22509	CR2003-0131 CR2004-0192	Aero Magnetic Survey, RC Drilling, Geochem, Loam sampling	26,273 line km of aeromags over Aljawarra Project. 5 anomalies identified within EL22509, 3 followed up with RC. RC Drilling – 3 holes for 175m to test magnetic anomalies. Alluvial magnetic sediments explained all anomalies. Two anomalies sampled with 5 x 50litre loam samples each. Samples negative except one containing a single chromite grain thought not to be kimberlitic in origin.
22/08/2002 - 22/08/2004	Elkedra Diamonds	Diamonds	EL22526	CR2003-0387, CR2004-0617	Aeromagnetic interpretation, Aeromagnetic data processing.	Reprocessing and interp of NTGS Elkedra aeromag survey. 1 low priority mag anomaly (CWN048) identified within the relinquished area.
17/10/2002 -	Elkedra	Diamonds	EL22546	CR2003-	Aeromagnetic	Reprocessing and interp of NTGS Elkedra aeromag

<b>Dates</b>	<b>Company</b>	<b>Commodity</b>	<b>Tenement Numbers</b>	<b>Item Number</b>	<b>Work Completed</b>	<b>Comments</b>
17/09/2003	Diamonds			0377	interpretation, Aeromagnetic data processing.	survey. 26 low priority mag anomalies identified within the relinquished area. Further work unwarranted.
30/09/2001 - 29/09/2002	Rio Tinto Exploration Pty Ltd	<b>Phosphate</b>	EL22594, EL22596, EL22597, EL22811.	CR2002-0243	Petrology Geochemistry Rock Chips Soil Samples	Reconnaissance, considered favourable for Wonarah style deposits, but downgraded with Wonarah.
20/12/2002- 9/10/2003	Elkedra Diamonds	Diamonds	EL23276	CR2003-0376	Aeromagnetic interpretation, Aeromagnetic data processing.	Reprocessing and interp of NTGS Barkley Area 2 aeromag survey.
21/02/2003 - 20/02/2004	Elkedra Diamonds	Diamonds	EL23596	CR2004-0197	Aeromagnetic interpretation, Aeromagnetic data processing.	7 low level magnetic anomalies identified. However they are unlikely to be large diatremes.
21/02/2003 - 20/02/2004	Elkedra Diamonds	Diamonds	EL23597	CR2004-0196	Aeromagnetic interpretation, Aeromagnetic data processing.	2 small high frequency magnetic anomalies identified. However they are unlikely to be diatremes.

**AP2193**

**CR1971-0070**

**Vam Limited / Elkedra Diamonds**

Report contains no text other than a cost breakdown & IP profiles. IP Profiles at Hatches Creek – Elkedra I.

A summary from another document (Arafura Resources NL, 2006) indicated that Vam's initial target was phosphate in the basal Georgina Basin and that although Vam discovered some the commodity is not of interest to Arafura).

**EL4589, EL4590, EL4595, EL4601, EL4602, EL4606**

**CR1985/0271**

**CRA Exploration Pty Ltd**

**.... – September 1985**

Reconnaissance Airborne Survey

Magnetometer Calibrations/Spectrometer Calibrations

Photo feature anomaly ledger

Photo feature geochemistry ledger

Ground magnetic profiles

Sample location

Exploration focussed on diamonds. Orientation airborne magnetic and radiometric surveys flown over the Lake Nash tenement block (by Geoterrex Pty Ltd, Sydney) indicated the majority of the area was not amenable to detailed aeromags for detecting magnetic diatremes.

B&W aerial photography was undertaken & photointerp identified 103 anomalous geomorphic features (Possible expressions of kimberlitic diatremes). 69 features were investigated on the ground with 49 soil and loam samples collected. -80 mesh Samples were submitted to CRAE Belmont lab for kimberlitic indicator mineral observations. Three rock chip samples. No significant trace element geochem results were reported. Aeromagnetics not useful in this terrane for diamond exploration.

Note: No P assays, however samples were assayed for U. Highest U assay 6ppm.

**EL4603 (Arganara Creek)**

**CR1985/0272**

**CRA Exploration Pty Ltd**

Exploration focussed on diamonds. Orientation airborne magnetic and radiometric surveys flown over the Lake Nash tenement block (by Geoterrex Pty Ltd, Sydney) indicated the majority of the area was not amenable to detailed aeromags for detecting magnetic diatremes.

B&W aerial photography was undertaken & photointerp identified 21 anomalous geomorphic features (Possible expressions of kimberlitic diatremes). 15 features were investigated on the ground and 10 -2mm loam samples and -80 mesh soil sample were collected.

---

In addition ten -2mm drainage samples were collected on the western half of EL4603. This sampling technique was adopted as the area comprises well drained outcropping Middle Cambrian sediments.

All samples were submitted to CRAE Belmont lab for kimberlitic indicator mineral observations. Results not reported in the document.

---

**EL9709: Originally 420 blocks granted to McCleary Investments Pty Ltd on 23/12/2001. Licence transferred to Arafura Resources on 4<sup>th</sup> March 2002. Third year relinquishment to 210 blocks on 22<sup>nd</sup> Jan 2003 and further reduced to 56 blocks at start of fourth year on 22<sup>nd</sup> Jan 2004.**

---

**EL9709**  
**CR2003/0046**  
**Arafura Resources NL**

Letter only (not an annual report as such) No on ground exploration conducted during the year ending 22<sup>nd</sup> January 2003.

**EL9709**  
**CR2004/0043**  
**Arafura Resources NL**

Letter only, regarding relinquishment. No exploration activities carried out on portion of EL9709 relinquished.

**EL9709**  
**CR2004/0056**  
**Arafura Resources NL**

Letter only (not a formal annual report as such) No on ground exploration conducted during the year ending 22<sup>nd</sup> January 2004.

**EL9709**  
**CR2005/0008**  
**Arafura Resources NL**

Letter only (not a formal annual report as such) No on ground exploration conducted during the year ending 22<sup>nd</sup> January 2005.

**EL9709**  
**CR2005/0009**  
**Arafura Resources NL**

Letter only, regarding relinquishment. No exploration activities carried out on portion of EL9709 relinquished 22<sup>nd</sup> January 2005.

---

**EL9709**

**CR2006/0011**

**Arafura Resources NL**

Varied targets included:

- Kurinelli-type Au
- Hatches Creek-type tungsten
- Barrow Creek type Ni/Cu
- Diamonds in primary intrusions.

AAPA certificate issued s and CLC clearances undertaken. There are two exclusion zones within EL9709 as well as the Turquoise mine which is also excluded.

Wide spaced reconnaissance soil sampling was undertaken at Elkedra in November 2005. Two sets of 148 samples (including two sets of 7 duplicates) were collected from 141 sites. At each site two samples were collected. An 'A' sample of 100g -80 mesh and a 'B' sample of 500g from -2mm mesh. Samples were collected at 500m spacing on lines 1000 m apart from the B/C horizon. Soil samples collected were sent to NAL in Pine Creek & assayed for Au, Ag, Cu, Pb, Zn, Ni, Co (no U, F, P or P2O5 assays). Results were discouraging and the tenement was surrendered.

**EL22505**

**CR2004/0348**

**De Beers Australia Exploration Ltd**

Exploration focussed on diamonds. NTGS Elkedra & Eromanga aeromag surveys were infilled from 400m to 200m line spacing over the entire tenement. This highlighted 7 anomalies. Two anomalies were discounted and the remaining five anomalies were drilled and attributed to magnetic gravels in concealed palaeodrainage. Five aircore holes for 278m were drilled within EL22505.

One of these holes, ELK065, occurs within the Annitowa 5 Application (EL27202).

**EL22505 & EL22509**

**CR2004/0622**

**De Beers Australia Exploration Ltd**

Letter only, regarding relinquishment. No exploration activities carried out between previous anniversary (2<sup>nd</sup> July 2004 for tenement EL22505 and 1<sup>st</sup> April 2002 for tenement EL22509) and relinquishment on 8<sup>th</sup> October 2004.

**EL22509**

**CR2004-0192, CR2003-0131**

**De Beers Australia Exploration Ltd**

---



Exploration focussed on diamonds. Exploration from 2/04/2002 – 1/04/2003 comprised almost entirely of geophysics. NTGS Elkedra & Eromanga aeromag surveys were infilled from 400m to 200m line spacing and data interpreted. Five magnetic anomalies were identified and more detailed mag surveys were flown over 1km x 1km blocks containing mag anomalies.

Two anomalies were discounted and three vertical RC holes (ELK073-01, ELK082-01 and ELK105-01) for 175m were drilled to test the remaining three anomalies. In addition 5 x 50litre loam samples were taken from each of the magnetic anomalies ELK082 and ELK105.

ELK073 (21m depth) is immediately south of Annitowa 5 application (EL27202). The other two anomalies fall outside & to the east of the Annitowa 5 ELA (EL27202)..

#### **EL22526**

**CR2003-0387, CR2004-0617.**

#### **Elkedra Diamonds**

Reprocessing and interp of NTGS Elkedra aeromag survey. Only 1 low priority mag anomaly identified within the relinquished area.

#### **EL22546 (Desert Plain)**

**CR2003-0377,**

#### **Elkedra Diamonds**

Reprocessing and interp of NTGS Elkedra aeromag survey. 26 low priority mag anomaly identified within the relinquished area. Not considered worthy of follow up.

#### **EL22594 (Frew River South), also EL22596, EL22597 and EL22811**

**CR2002-0243**

#### **Rio Tinto**

Tenement EL22594 overlaps the northern portion of Annitowa 1 (EL27201). The remainder of the tenements covered by this report are outside of the Annitowa application area and extend to the north and west of the Annitowa tenement applications.

Focus on phosphate exploration. Area considered favourable for Wonarah style phosphate deposits. Tenements cover Mid Cambrian sediments, and occur south of the Wonarah phosphate deposit hosted by the Upper Gum Ridge Formation. In the southern part of the tenement area basement ridges of the Palaeoproterozoic Davenport Block are interpreted from aeromags. Basement highs are flanked by onlapping dolomitic rocks equivalent to Thornton Limestone (sequence 1). Overlying sequence 1 carbonates and older basement is dolostone, mudstone and phosphorite of the lower middle Cambrian Upper Gum Ridge formation and mudstone siltstone and dolostone of the middle Cambrian Wonarah beds. The phosphorite time horizon (basal sequence two) is interpreted to be shallow throughout the tenement area but outcropping phosphatic units have only been identified in Frew River North (EL22596).

Limited reconnaissance was undertaken in 2002. this comprised of collecting 8 rock chip samples, petrographic analysis of one of these samples and the collection of 6 orientation soil samples from over subcrop. None of these coincide with the area covered by the Annitowa 1 application (EL27201).

---

Reconnaissance undertaken Q4 2002. 1 sample of dolomitic limestone (+ve response to ammonium molybdate testing) was submitted for petrographic analysis.

8 rock chips samples were collected and assayed. 6 from Arruwurra (EL22596 – Frew River North) and 2 from EL22597 – Frew River west.

6 orientation soil samples were collected from over subcropping phosphatic Upper Gum Ridge Formation, however the -80# fraction sampled was contaminated with Aeolian material and was ineffective.

**EL23276 (Dingo West)**  
**CR2003-0376**  
**Elkedra Diamonds NL**

The western side of historic Tenement EL23276 overlaps a small portion of the eastern side of EL27203.

Exploration focussed on diamonds. The only work undertaken was the reprocessing and interpretation of NTGS Barkley Area 2 aeromag survey. No magnetic anomalies were identified and the area was surrendered.

**EL23596 (Elkedra River West)**  
**CR2004-0197**  
**Elkedra Diamonds NL**

The eastern half of historic tenement EK23596 overlaps the western portion of EL27205, EL27202 and EL27204 (Annitowa applications 3, 4, and 5).

Exploration focussed on diamonds and comprised of reprocessing and interpretation of NTGS Elkedra aeromag survey (flown by Tesla Airborne). Seven low level magnetic anomalies were identified from the aeromagnetic data. However, these were not considered to be indicative of the presence of diatremes.

Two of the anomalies identified (ELR2 and ELR 8) occur within the EL27202 (Annitowa 5 application) whilst a third, ELK9, occurs within EL27205 (the Annitowa 3 application).

**EL23597 (Elkedra River East)**  
**CR2004-0196**  
**Elkedra Diamonds NL**

Historic tenement EL23597 overlaps portions of all five Annitowa applications.

Exploration focussed on diamonds and comprised of reprocessing and interpretation of NTGS Elkedra aeromag survey (flown by Tesla Airborne). Two low level magnetic anomalies were identified from the aeromagnetic data. However, these were not considered to be indicative of the presence of diatremes.

---

## 2.0 References

- Allnut, S.L., Bubner, G. J., 1985. CR1985-0271 'EL4589, EL4590, EL4595, EL4601, EL4602 and EL4606, Frew River, Prout, Semi Desert, Elkedra River, Annitowa, East Dam, Final Report for the Period Ending 16<sup>th</sup> August 1985. Internal Report number 130569 Prepared for CRA Exploration Pty Ltd. Report dated September 1985. CR1985-0271.
- Allnut, S.L., Bubner, G. J., 1985. CR1985-0271 'EL4603, EL4604, EL4619, EL4620, EL4621 Arganara Creek, Bundey River, Mud Hole Creek, Arthur Creek, Lucy Creek, Final Report for the Period Ending 16<sup>th</sup> August 1985. Internal Report number 130570 Prepared for CRA Exploration Pty Ltd. Report dated September 1985. CR1985-0272.
- Broadbent, G.C., and Lilley, G.L., 2002.  
Combined Annual Report for the Period Ending 28<sup>th</sup> September 2002. EL22594 Frew River South, EL22596 Frew River North, EL22597 Frew River West, EL22811 Barkly 4. Exploration Report No. 25613 . Rio Tinto Exploration Pty Ltd. CR2002-0243.
- Goulevitch, J. 2004  
Letter re: Report on Area Relinquished, 22 January 2004, Exploration Licence 9709 – Elkedra. Arafura Resources NL. CR2004-0043.
- Ingram, J. and Tompkins, L. A., 2003(a)  
Altjarrowarra Craton Diamond Project, Partial Relinquishment Report for EL22596 (Annitowa). Elkedra Report No. 0098, dated November 20, 2003. CR2003-0387.
- Ingram, J. and Tompkins, L. A., 2003(b)  
Altjarrowarra Craton Diamond Project, Final Relinquishment Report for EL22546 (Desert Plain). Elkedra Report No. 0101, dated December 16, 2003. CR2003-0377.
- Ingram, J. and Tompkins, L. A., 2004  
Altjarrowarra Craton Diamond Project, Final Relinquishment Report for EL23276 (Dingo West). Elkedra Report No. 0106, dated January 7, 2004. CR2003-0376.
- Leadbeatter, J. and Tompkins, L. A., 2004(a)  
Altjarrowarra Craton Diamond Project, Final Relinquishment Report for EL23596 (Elkedra River West) for the period ending February 20, 2004. Elkedra Report No. 0123, dated April 19, 2004. CR2004-0197.
- Leadbeatter, J. and Tompkins, L. A., 2004(b)  
Altjarrowarra Craton Diamond Project, Final Relinquishment Report for EL23597 (Elkedra River East) for the period ending February 20, 2004. Elkedra Report No. 0124, dated April 19, 2004. CR2004-0196.
- Leadbeatter, J. and Tompkins, L. A., 2004(c)  
Altjarrowarra Craton Diamond Project, Final Relinquishment Report for EL22596 (Annitowa). Elkedra Report No. 0148, dated November 19, 2004. CR2004-0617.
-

- McGilvray, C.T., 2006                      Soil Sampling Programme Results, November 2005, EL9709 Elkedra Northern Territory, Australia. Arafura Resources N.L. CR2006-0011.
- Pittard, K. J. 2003                            Aljawarra Project, Exploration Licence 22509 Annual Report for the Period Ending 01 March 2003. Report Prepared for De Beers Australia Exploration Ltd. Report dated April 2003. CR2003-0131.
- Pittard, K. J. 2004(a)                        Aljawarra Project, Exploration Licence 22505 Annual Report for the Period Ending 02 July 2004. Report Prepared for De Beers Australia Exploration Ltd. CR2004-0348.
- Pittard, K. J. 2004(b)                        Aljawarra Project, Exploration Licence 22509 Annual Report for the Period Ending 01 March 2004. Report Prepared for De Beers Australia Exploration Ltd. Report dated April 2004. CR2004-0192.
- Vam Limited. 1971                            Final Report for Prospecting Authority 2193, VAM Limited. CR1971-0070