Limbunyah Background - 2011

TENNUM	Company	Commodity	Exploration	Relevance	Overlap %	Comments	COMPANY_REPORTS
EL 7141	Peko Exploration	Au, basemetals	RC, DD, sseds, questEM	100	M	Black shale anom BM	CR1992-0102,CR1993-0144,*CR1993-0704*
EL 26232	NO INFO			adj			No reports listed
EL 8935	MIM Exploration/ Stockdale Prospecting	diamonds?	heavy mineral reconnaissance, loam & sseds, dig aeromag	100	M	Only basaltic chromites recovered	*CR1997-0672,CR1998-0030,CR1998-0638*
EL 22643	Ausquest Ltd	Ni-Cu-PGE/diamonds	DD (ANT series), RC, loam & sseds, gmag, ground EM, gravity	adj	M	No conclusion in summary	CR2003-0019,CR2004-0088,CR2004-0112,CR2004-0662,CR2004-0710,CR2005-0631,CR2005-0678,CR2006-0609
EL 10097	Kajeena Mining Company	Pb, Zn, Au, Cu, diamonds	mag, soil, R chip, sseds, orientation trip	100	M	Mod anom areas for Cu, Pb, Zn, Mn and Cr, Ni (diamond indicators)	CR2002-0319,CR2004-0094,CR2004-0790,CR2005-0542,CR2006-0584,CR2007-0447,CR2007-0713,CR2008-1045,CR2009-0915
EL 22305	Gravity Capital/ Diamond Mines Australia/ Ashton Mining	diamonds	surface samp, airborne grav gradiometer,	adj	L	Number of anomalous results - no further work done	CR2004-0235,CR2005-0234
EL 25083	NO INFO			adj			
EL 24764	NO INFO			adj			
EL 4371	Western Mining	diamonds	stream seds	10	L	No economic diamond potential	*CR1985-0093,CR1986-0051*
EL 5817	Linc Enterprises		none	50	L	No results in report. Permit relinquished based on neg results by prev explorers.	*CR1989-0752*
AP 2068	Metals Exploration	Cu in Antrim volcanics	not specified in summary	50	L	9 major anom, 35 minor Cu anom unclear if further work followed	CR1968-0035
EL 1681	Anaconda Australia	Pb-Zn	aero mag, reconnaisance mapping	80	M	1 area of Pb and Zn mineralisation. Extent is too small.	CR1979-0173
EL 2301	Ashton Mining	diamonds	not specified in summary	5	L	No indicator minerals found.	CR1981-0153,CR1983-0208
EL 2299	Ashton Mining/ Aberfoyle Exploration/ AOG Minerals	diamonds	not specified in summary	30	L	No kimberlite indicator minerals found	CR1981-0105
AP 1895	Amad?	base metals?	17 rock chip samples	20	L	No conclusion in summary	CR1968-0010
EL 1608	Dampier Mining	unknown	gravity and mag survey	15	L	Results of grav and mag surveys not encouraging.	CR1979-0001
EL 1606	Dampier Mining	unknown	gravity and mag survey	10	L	Results of grav and mag surveys not encouraging.	CR1979-0001
EL 2186	Western Mining	Pb/Zn	Photogeo, sseds, geochem assay	70	M	Subdued geochem results considerably downgraded potential	*CR1980-0077,CR1981-0003,CR1981-0305,CR1982-0386*
AP 2327	Metals Exploration/ Freeport of Australia/ Anglo American Corp.	Cu	not specified in summary - proposed IP surveys and follow up drilling	40	L	3 types of Cu occurence of interest - fault/shear, vesicles in flow tops, agglomerates	CR1970-0047
EL 2486	NO INFO			75	L		

EL28040 - Limbunya

General Information:

EL28040 is located in NT in the Tanami region near the WA border. The area was applied for with a view to its potential for mainly unconformity style Uranium mineralisation, with 1890-1850 Ma granites and Palaeoproterozoic metasediments of the Inverway Metamorphics (equivalent to Tanami Group) at shallow depth below the Birrindudu and Victoria Basins. The basal unconformity of the Birrindudu/Victoria Basin is near to the current land surface, providing support for an "Alligator River" unconformity model. There are major through-going NW-trending faults that are in a favourable orientation for reactivation and development of unconformity style deposits.

Much of the previous exploration has been focussed on gold, base metals and diamonds. Geophysical surveys carried out directly over this licence include QuestEM and aeromagnetics. RC, diamond and water bore drilling have been carried out over the Northern part of the licence by Geopeko, with only gold, copper, lead and zinc assays carried out. In 1995 the NT Geological Survey carried out a regional 500m spaced TMI and radiometric survey (Kevron). In 2008 the NTGS carried out an aerial magnetic survey - Victoria River Basin Survey.

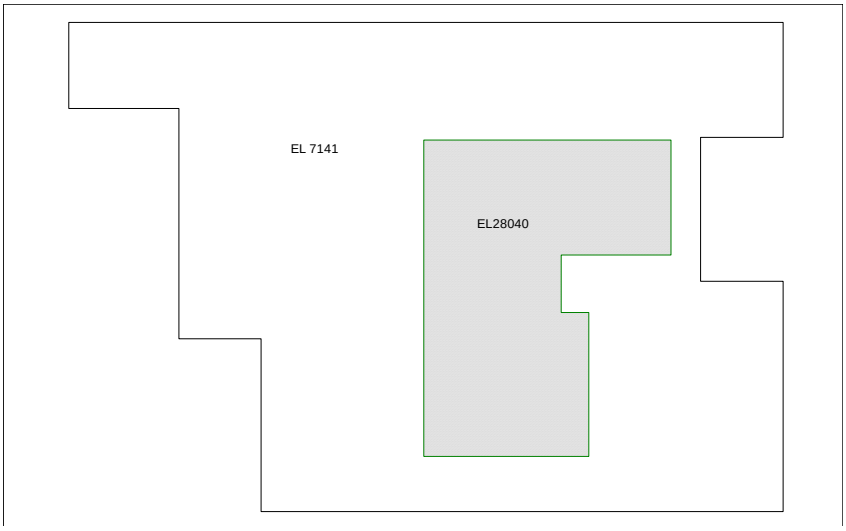
Numerous rockchip samples have been collected by Geopeko and the NT Geological Survey, some of which have been described as breccias. Results include up to 1000ppm Pb, 950ppm Zn (in the same sample) and 210ppm Cu. Uranium was not assayed.

Soils collected by Geopeko yielded anomalous Cu, Pb and Zn. Uranium was not assayed.

Known mineral include five copper occurrences associated with Cambrian basalts over a distance of some 20km. Barite associated with veining in an abandoned mine.

Pyrobitumen and live oils bleeds, particularly in the Limbunya, Bullita and Auvergne Groups were reported by Cutovinos et al., 2002; Dunster et al., 2000;Dunster and Cutovinos, 2002; Beier et al., 2002). The presence of hydrocarbons has often been reported in sedimentary successions containing uranium mineralisation and is referred to in some cases as being instrumental in uranium deposition due to its reducing capabilities.

EL 7141 - Peko



CR1992-0102

Geopeko were looking for Century/Macarthur River-style sedimentary hosted base metals, using the Limbunya group as a synonomous setting for the Macarthur Group. Geopeko followed up on unfinished stream sediment work carried out by Western Mining. A 20m thick black shale/dolomite unit within the Mallabah Dolomite (part of the Limbunya Group) anomalous in base metals was the focus of most exploration activity. **QuestEM** (250m line spacing), mapping, stream sediment sampling (no uranium assayed) rockchip sampling and **SIROTEM** were carried out. Petrology revealed sphalerite parallel to bedding, ie syngenetic whilst Galena was located in carbonate veinlets.

CR1993-0144

GeoPeko describes sheared **graphitic shales, carbonaceous clays** overlying the Limbunyah Group and **graphitic shales forming basement** to the Limbunya Group as well as **carbonate breccias**. Pyritic shales form part of the Blue Hole Formation which overlies some 150m above the Mallabah Dolomite. CSIRO Pb isotope studies on mineralised samples indicated Mid Proterozoic age and more than one **hydrothermal source**. Ground magnetics was carried out. The **Stirling sandstone (Phs) is the basal unit of the Limbunyah Group and comprises conglomerates sands and grits**. Detailed photo-interp highlighted three distinct structural areas bound by NE/SW faults and concluded sedimentation of the Limbunya Group was contemporaneous with faulting. LMDH1-7 & 9 terminated in dolomite, black shale and commonly a combination of these (ie Limbunya Group). In contrast, **LMDH8 drilled into interpreted Inverway Metamorphics comprising siltone/shale/qtz Py stockwork, talc alteration and graphitic shale.** Elsewhere, basement lithologies have been muscovite schists. The major NE/SW fault transgressing the area (Limbunya Fault) is interpreted to have a 100m movement on it (vertical?). QuestEM highlighted only Antrim Plateau Volcanics and laterites as well as **much deeper horizons within the Inverway Metamorphic basement** (not followed up) – TMI image digital page 298 (registered).

- EM has proved a useful technique in the area for identifying and mapping conductive units. The four main conductive horizons are the prospective Mallabah black shale unit, Blue Hole Formation shales, black pyritic carbonaceous clay overlying the Limbunya Group in some south-eastern areas and black graphitic basement shales in the southern part of the survey area.

LMDH8 intersected a hematitic sandstone at the unconformity around 100m. An ICP mulitelement scan was carried out on core from LMDH8.....results??

Three structural zones were identified within the Limbunya Group; South Central and Northern. The relative structural complexity of the central zone and presence of diapirs was interpreted to indicate basement mobility and high heatflow which could have been conducive to generation of hydrothermal solutions and metallogenic transport.

Lead isotope studies identified at least one sample as being enriched **by in situ radioactive decay of uranium** (digital pg 118).

HoleID	TD	EOH Gp	EOH Fm	Contains
LMDH1	167.2m	Limbunya	Amos Knob Fm beneath Mallabah	Sulphidic black shales
LMDH2*	72.7m	Limbunya	Amos Knob Fm beneath Mallabah	Sulphidic black shales (approx 40m)
LMDH3*	224m	Limbunya	Through the Mallabah	Sulphidic black shales (from 180m)
LMDH4*	450m	Limbunya?	Through the Mallabah	Sulphidic black shales (from 420m)
LMDH5*	400m	Limbunya?	Through the Mallabah	Sulphidic black shales (from 153m) specular hematite veining
LMDH6*	152.6m	Limbunya	Through the Mallabah	Mainly dolomite and shale int/bedded
LMDH7*	164.9m	Limbunya?	Through the Mallabah	Sulphidic black shales (from 150m)
LMDH8*	**252.1m**	**Inverway**	**Felsic dyke**	**Brecciation +Hem+talc+qtz (from113m) in shales and siltstones.** **Graphitic sulphidic shale from 134m with carbonate breccia + talc. 2m@9000ppmCu 134-136m**
LMDH9*	129m	Limbunyah		Mainly dolomite. No mineralisation. Conglomerate @63-64m **(STIRLING?)**
LMDH10*		Inverway		• Targeted and EM linear anomaly • 100m Limbunyah sandstones on Inverway metamorphics • 20cm hematitc qtz arenite rests unconformably on Inverway hematitic sericitic /graphitic shales (brecciated and sheared) • Altered felsic dykes • **6m @ 4173ppm Cu** (chalcopyrite) in late stage carbonate breccia veins in

				graphitic unit the Inverway Metamorphics
LMDH11*		Inverway?		Stirling Fm -Basal conglomerate 30cm thick
LMDH12*		Inverway?		Black carbonaceous pyritic clay@27-53m
LMDH13*		Inverway		Meta sandstones and qtz muscovite schist @25m
LMDH14				
LMDH15				

***Core stored at the Darwin Core facility (Ph.89843036)**

19 RC holes (not on open file) were designed to test the thickness of the Mallabah Formation. Sulphidic black/carbonaceous shales were encountered variously between 40 and 150m depth. Most holes ended in black dolomite/shale which is assumed to be Limbunya Group.

LMRC 18 contained abundant specular hematite veining in shale 9-21m.

CR1993-0704

Twelve anomalies from the airborne AEM were identified for follow up by ground TEM.

9.1.2 Ground EM

Two lines of gridding were put in using a G.P.S., compass and tape across an EM anomaly located approximately from the QUESTEM airborne survey (Fig 8).

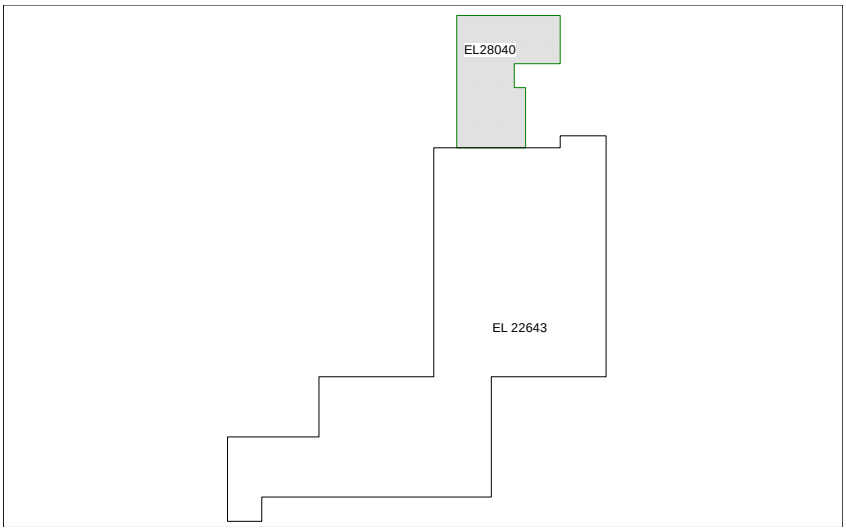
Line 579050E 8057100N to 8058100N
Line 587150E 8057400N to 8058050N

The lines were read with 100m moving loop SIROTEM and results (Figs 2 & 3) used to target diamond drill hole LMDH13.

Drilled one RC and four diamond holes aimed at EM anomalies and interpreted (magnetics) basement structures aimed at structurally controlled Cu/Au mineralisation. No anomalous results were obtained and tenements were surrendered in October 1993.

Petrology carried out by Pontifex and Associates identified hydrothermally brecciated carbonaceous sediment with complex veins with quartz, carbonate and pyrite (LMTS21).

EL 22643 - Ausquest



CR2003-0019

Ausquest in JV with BHP were looking for Norilsk-style Ni-Cu-PGE sulphides and diamonds. Exploration was focussed on magnetic anomalies which could be associated with feeder pipes/sulphide traps for the Ni-Cu-PGE depleted Cambrian Antrim Volcanics.

Ground gravity and ground magnetics were carried out and drilling was focussed on interpreted (from gravity and magnetic) mafic sill bodies within the sedimentary pile, particularly adjacent the Neave Fault. Sedimentary Rocks including diamictite, sandstone, red and green mudrock, sphalerite-pyrite-bearing black shale and limestone were intersected below the Basalt sequence and dating on the sulphide-bearing black shale unit was in progress. Drill logs of ANTD001 – ANTD002 indicate carbonaceous units within limestones, conglomerates, oxidised sandstones and mudstones with reduction spots etc. (Probably upper Limbunyah Group?) Uranium was assayed for but was reported no higher than 2.07ppm. ANTD003 contained red, green and black (pyritic), dolomitic mudstone and quartz sandstone. Thin calcite veins with sphalerite occurred around 300m.

CR2004-0088

Rio Tinto Exploration came in to test coincident magnetic/gravity anomalies for diamonds. Six RC holes were completed but no kimberlitic material was intersected. Multielement assays were carried out and maximum **uranium was 28ppm.**

CR2004-0710

Four ground EM lines were collected in and around the Neave fault to detect any sulphide-bearing sills. Data modelled and discussed in next report.

CR2005-0631

Several EM targets were identified but the whole project was put on hold pending a review.

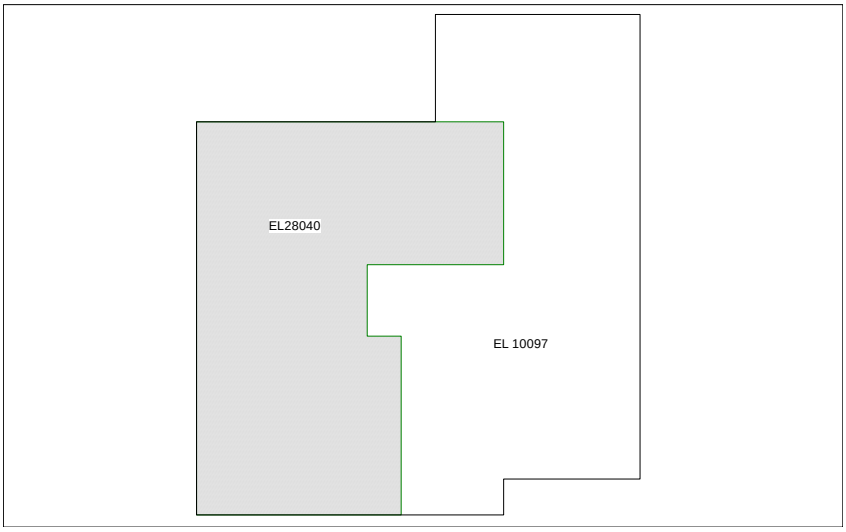
CR2006-0609

No work carried out

CR2005-0678

Ausquest in JV with BHP were looking for Norilsk-style Ni-Cu-PGE sulphides and diamonds. Exploration was focussed on magnetic anomalies which could be associated with feeder pipes/sulphide traps for the Ni-Cu-PGE depleted Cambrian Antrim Volcanics.

EL 10097 - Kajeena



CR2008-1045

The Palaeoproterozoic Inverway Metamorphics are correlated with the Tanami Comlex pre Barramundi Orogen (1880 –1840) flysh sedimentation. Regional gravity and magnetics interpretation indicates a continuity beneath the later sedimentary basins and basalt cover. Two small inliers on the **Inverway Metamorphics** are exposed along the core on a NE trending anticline within the middle of EL10097. The exposures are comprised of steeply **dipping muscovite schist**, which has at least two cleavages, grey to reddish – grey volcanics
and minor siltstone. Metamorphic grade is sub – greenschist to greenschist facies. Concordant quartz veins are common and form massive 2-4m thick reefs of white quartz, which cut the schist and volcanic.

The Birrindudu Basin contains Paleo-Proterozoic sandstone, mudstone and shallow water evaporitic carbonate rocks . The Limbunya Group is dated at 1.7 – 1.6 Ga and is a time equivalent of host sediments to the extensive syn – epigenetic lead-zinc province of the eastern part of the North Australian Craton.

Limbunya group -

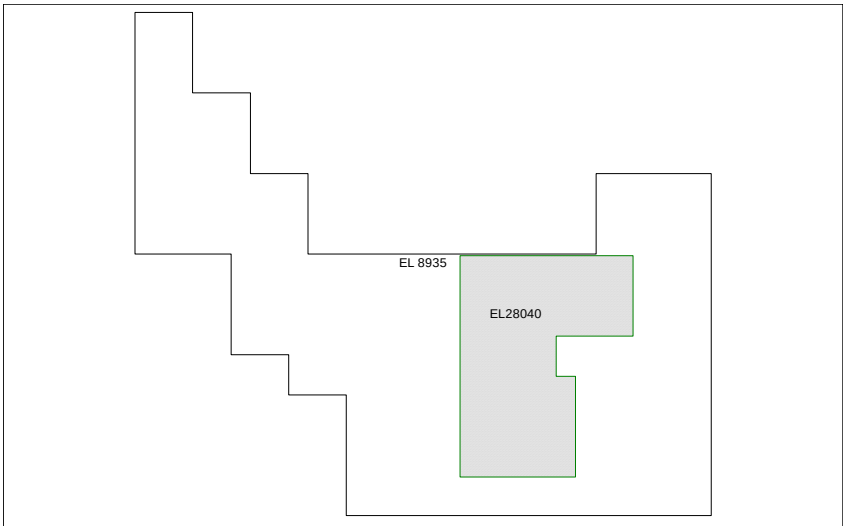
All internal contacts are conformable (after Cutovinos et al 2002)

Unit and Typical Thickness	Lithology	Depositional Environment
Killaloc Formation 104m	Dolostone, dolarenite stromatolitic dolostone, dololutite, dolomitic siltstone; minor sandstone	Marine / Lagoonal
Fraynes Formation 165m	Laminated dolomitic siltstone and mudstone; minor silty dolostone, dolostone, tuffite, siltstone and very fine sandstone	Low-energy, near shore shallow marine
Campbell Springs Dolostone 160m	Stromatolitic dolostone; minor dolarenite, dolorudite and dolosiltite; rare tuffite	Shallow to very shallow marine reworked by waves and currents; some storm deposits
Blue Hole Formation 330m	Dolomitic mudstone, stromatolitic mudstone, siltstone; minor tuffite, dolarenite, sandstone and shale	Shallow marine with periods of low-energy deeper marine
Farquharson Sandstone 40-110m	Fine sublith-arenite and quartz arenite, dolomitic siltstone; minor dolostone and mudstone	Shallow marine/fluvial with periods of sub-aerial exposure
Kunja Siltstone 60-65m	Green and grey mudstone and siltstone (some dolomitic) carbonaceous in lower intervals; rare dolostone and tuffite	Low-energy shallow marine, below wave base
Mallabah Dolostone 10-100m	Laminated to thinly bedded dololutite, dolarenite and shale, stromatolitic dolostone; minor carbonaceous mudstone; rare silty dolostone	Storm-influenced, shallow marine with periods of low-energy deeper marine, below wave base
Amos Knob Formation 40-50m	Stromatolitic dolostone, dolarenite, mudstone, siltstone and shale	Low-energy shallow marine; upper levels higher energy, shallow marine
Pear Tree Dolostone 75-92m	Dolarenite, dodrudite, dololutite, stromatolitic dolostone, dolomitic mudstone and oolitic dolostone; minor carbonaceous mudstone	Storm-influenced shallow to very shallow marine
Margery Formation 116-125m	Stromatolitic dolostone (silicified), dolarenite, dololutite, siltstone, sandstone and claystone	Shallow marine to inter-tidal, basal part terrestrial
Stirling Sandstone 120m	Quartz-arenite, dolomitic sandstone, conglomerate, minor clay laminations	Shallow marine with periods of sub-aerial exposure, syntectonic

188 soil samples were collected with multi element assays containing no anomalous uranium (most below detection)

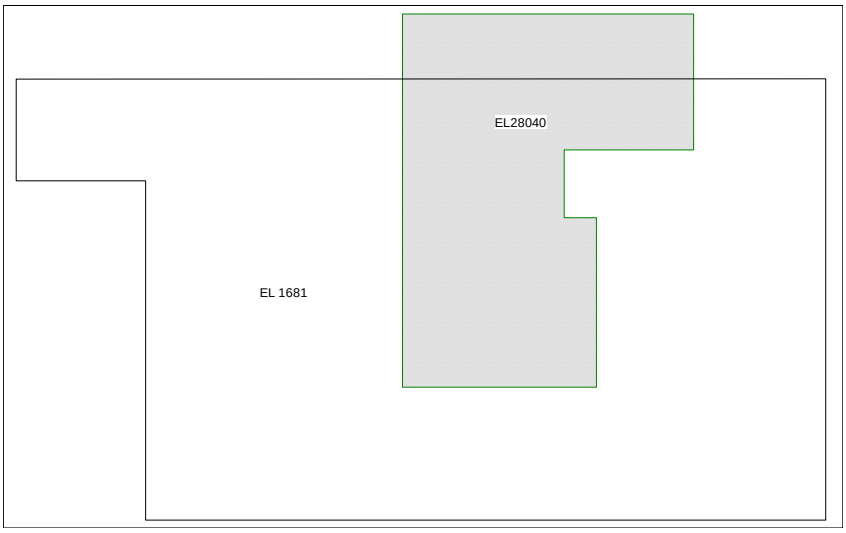
60 stream sediment samples assayed for Ag Au Cu & Pd only.

EL 8935 - MIM Exploration/ Stockdale Prospecting



Diamond Exploration surface sampling only

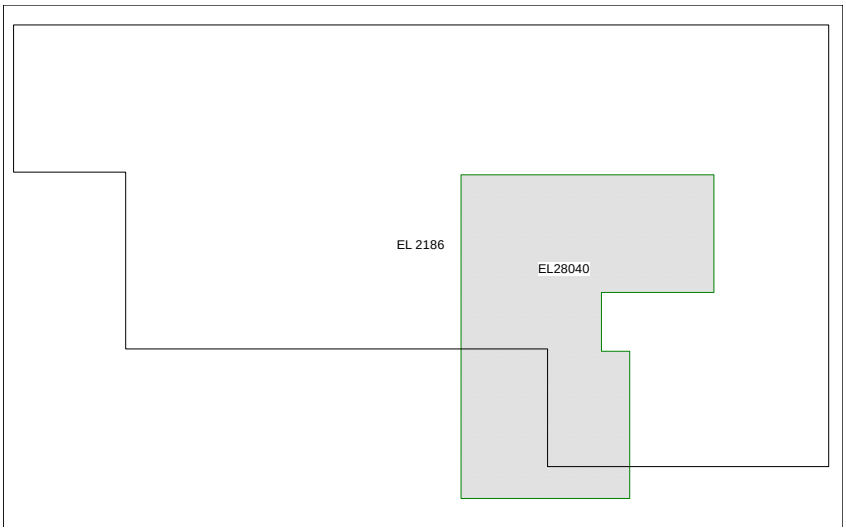
EL 1681 - Anaconda Australia



CR1979-0173 (combined report over many ELs)

Anaconda were looking for large-sclae McArthur River-style base metals and kimberlitic intrusive. Rockchips collected were assayed for uranium and all <15ppm. Magnetics and ground EM were carried out. Rock chip samples collected over the group of tenements over a variety of Groups and Formations including Inverway Formation ironstones contained <15ppm U.

EL 2186 – WMC



WMC were searching for stratiform Pb/Zn in the Mid to Upper Proterozoic. Some 2000-odd -80# Stream sediment samples were assayed for Cu,Pb,Zn,AS,Co, Mn,Ba. U was not assayed. Photogeological mapping was carried out. All work was focussed on the Limbunyah Group. (good photogeology base map may use in field?).

AA657008 bulk stream sediment sample contained 35ppb Au.

AA657022 rock chip sample - limonite nodules in mineralised carbonate contained 1000ppm Cu, 16,250ppm Pb and 8600ppm Zn.

The tenement was surrendered in favour of other areas of higher priority.

REFERENCES:

Cutovinos et al., 2002; Dunster et al., 2000;Dunster and Cutovinos, 2002; Beier et al., 2002 Limbunyah 1:250,000 explanatory notes?)