

EL28054 Benmara historical notes – July 2011

TENNUM	company	commodity	exploration_done	tenement overlap	relevance	comments	COMPANY_REPORTS
EL 6836	Carpentria Gold	Au	rchip/sseds	100	M	105 sseds low levels base metal	CR1991-0354
EL 7223	MIM Ashton	diamonds	RAB loams DD aerial mag soils lags	100	L	several microdiamonds + indicators	CR1992-0093,CR1993-0151,CR1993-0330,CR1994-0232,CR1994-0362,CR1995-0245,CR1995-0370,CR1996-0234,CR1996-0441,CR1997-0203,CR1998-0250,CR1999-0239
EL 7851	Ashton	BM Au	sseds	100	L	not prospective	CR1994-0039
EL 8997	BHP	BM sed h	mag ground EM AEM (Look)	5	M	PROTEM sounding survey to investigate the electric	CR1996-0239,CR1997-0260,CR1997-0325
EL 9989	int. earthscan Plenty Min	alterati	landsat thematic mapper	adj	L	Structural geological and mineral alteration interpretation from Landsat TM satellite data	CR2002-0391
EL 22994	De Beers	diamonds	sseds	10	L	results were non kimberlitic	CR2003-0482
EL 4360	Ashton aberf. AOG	diamonds	DD RAB sseds mag	95	L	indicators and Micros.ultra basic intr.	CR1985-0030,CR1985-0266,CR1986-0305,CR1987-0219,CR1989-0265,CR1989-0288,CR1989-0289,CR1989-0678
EL 4352	Ashton Aberf. AOG	diamonds	RAB,BCL,	5	L	microdiamonds,barren intrusive pipes	CR1984-0236,CR1985-0289,CR1987-0006,CR1987-0218,CR1989-0266,CR1989-0288,CR1989-0289,CR1989-0654
AP 3401	Esso		no work,desktop	30	L		CR1973-0103
AP 1897	IMC development	phosporous	RC, radiometrics?	100	M	primary targets in the Georgina Basin for phosphorite are the margins and basement highs of the Earl	CR1968-0030,CR1968-0033,CR1969-0062,CR1970-0035,CR1970-0038

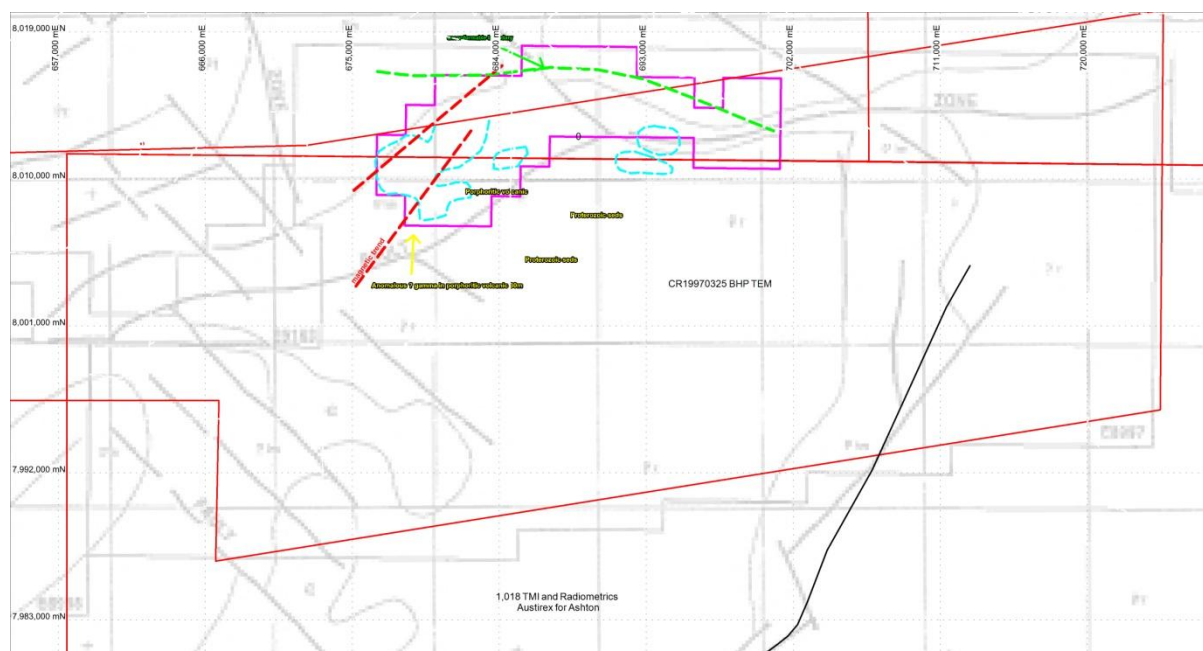
EL 2232	Amoco	Cu Pb Zn Mc Riv	geochem.looking McRiv grph seds	adj	M	bdry Dun & Sth Nic.Murphy, meta volcanics,ferrug lateritised Fe ridges. Bouger gravity target	CR1981-0033
EL 1427	Mines Administration	U rollfront	drilling 3xholes	adj	H	follow up U anom in water bores. Concl no sig results	CR1978-0138,CR1980-0118
EL 2111	Afmeco	U base metals		60	H	followed up several anoms.results dicouraging.	CR1980-0194,CR1981-0123
EL 1339	Otter	sed U	13 holes.900m	90	H	murphy met. follow up U in water bores.concl wrong stratig.for sed U	CR1978-0038
EL 1235	Mines Admin.	U, Base metals	ground rad,drilling,perc,	5	H	All radioactivity so far detected is due to hematized fault breccias. Radioactivity is due to the pr	CR1977-0095,CR1979-0009,CR1980-0143
EL 4359	Ashton,Aust diamonds	diamonds	RAB loam costean	adj	H	alluvial micros macros .worth a look for radiometrics	CR1985-0029,CR1985-0244,CR1986-0304,CR1987-0220,CR1989-0267,CR1989-0288, CR1989-0289,CR1989-0700,CR1989-0715,CR1995-0022,CR1996-0453

INDIVIDUAL COMPANY REPORT SUMMARIES:

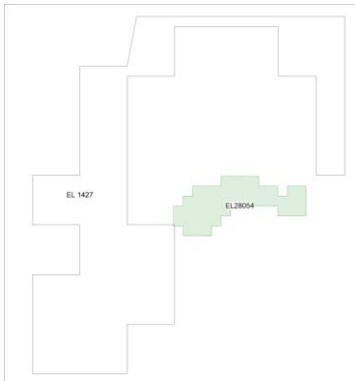
Historic geophysics -

Ashton TMI/radiometrics 1984 300m spacing Austirex International

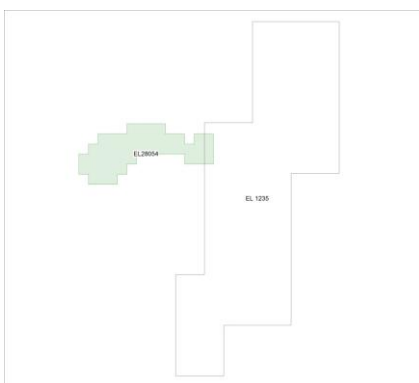
BHP 25Hz GEOTEM (1000m spacing) and ground EM 1997



Mines administration - CR1978-0138, CR1980-0118



Mines administration EL1427 (adjacent west) followed up anomalous U in groundwater samples obtained from Esso. They were looking for roll front uranium as well as determining the presence of the Murphy metamorphics and any associated prospectivity. A small drill program was carried out around the anomalous uranium water bore but results did not confirm previous company work. A gamma response in gravels of CO14 was recorded but was not associated with anomalous uranium in assays. Drilling encountered (**Lower Proterozoic**) Murphy metamorphics as weathered lateritised schist and Mittiebah Sandstone overlain by (**Mesozoic**) clays and gravels 0-15m. In turn overlain by up to 30m of **tertiary** sands gravels and clays. Anomalous U₃O₈ was obtained from water samples in Benmara 12 (97ppbU₃O₈) (approx. 8km NW Benmara homestead) and Benmara 3 (12ppb U₃O₈) (Approx. 12km NE Benmara homestead). But the 300X background results of the previous explorer were not replicated.



CR1977-0095,CR1979-0009,CR1980-0143

Mines administration EL1235 – Photogeological mapping was contracted out (report included). The conclusion was that the uranium potential for an Alligator River Region model was high; with the Nicholson

granites, Cliffdale volcanics and Benmara Beds being a possible source with NE NW and ENE trending tensional faults providing potential channelways for mineralised fluids.

BMR had recently carried out soil sampling and stream sediment sampling which highlighted a NW trending anomaly associated with high level stock of the Nicholson Granite, supporting the concept that the granite can be a source of uranium in the area.

Anomalous radioactivity (derived from 5000 line km airborne radiometrics) was found to be associated with **dilated faulted contact between the Murphy metamorphic and Nicholson Granite**. One sample recorded 2500 cps on the scintillometer in a highly weathered brecciated and sheared metamorphics. Petrography on this specimen described kaolinisation and hematisation of chert granophyres and rhyolite(?). Radioactivity was contained within veins within the kaolinite. Scans indicated secondary minerals including Carnotite and Torbonite as well as Brannerite.

The main basement feature is NE trending basement ridge of Murphy metamorphic associated with a gravity high and strong faulting. Uranium mineralisation has been associated with this, found in and around faults and shears of the Cliffdale and Seigal volcanic and Westmoreland conglomerate. Mineralisation is typically Pitchblende and secondary uranium minerals (see petrography report) with minor sulphides around 30m from the surface. The author assumes mineralisation was leached from the Murphy metamorphics and transported along the unconformity at the top of the PreCambrian to favourable lithologies and or structures.

The drill targets here were favourable lithologies in the Murphy metamorphics close to dilational structures as well as the unconformity.

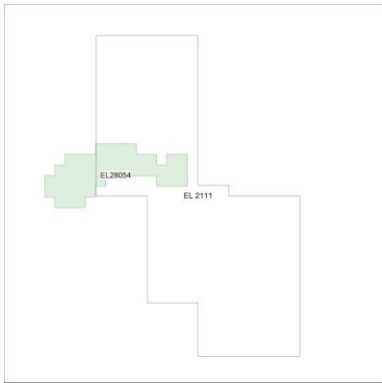
Anomalous Cu (380ppm) and U3O8 (690ppm) were recorded in rockchips from anomaly 1.

2000-odd metres for 72 holes were drilled into the interpreted down dip extension of four surface anomalies. The best result from BPH 16 was mineralisation 19-28m within a **hematitic quartz breccia (3600 cps – 615ppm U3O8)**. Most other holes did not encounter mineralisation or anomalous radioactivity.

The conclusion was that the area had similarities to the Pine Creek Geosyncline and that looking for graphitic/carbonate units in the Murphy Group may lead to better results.

Puzzling though, was the conclusion that all radioactivity in drill holes was due to radioactive apatite...?

EL2111 Afmeco



CR1980-0194, CR1981-0123

Afmeco explored **EL2111** for uranium and base metals. After carrying out airborne radiometric and magnetic surveys, stream sediment and rock chip sampling included ground scintillometer traverses. Anomalous radioactivity (300cps) in rock chips corresponded to 15ppm U and 350ppm Th (heavy mineral band).

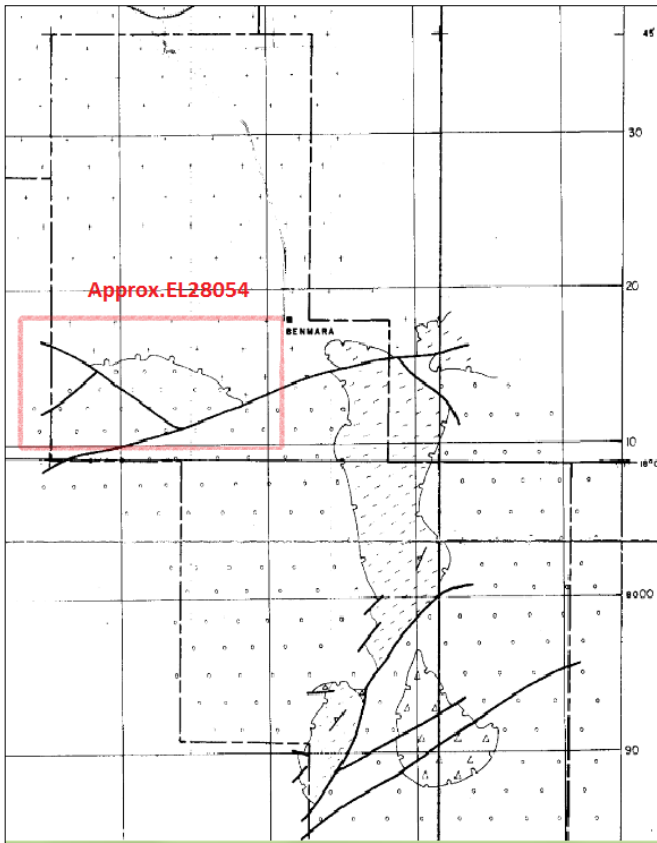
Uranium in stream sediment samples was low, with the highest being 7ppm with a 3ppm detection limit.

Some 2500m of percussion and some diamond drilling were carried out with the only radioactivity recorded from SD60 (off Toro licence) due to thorium. Drilling was carried out to the North of Toro licence; BENS26 – BENS36 which intercepted Nicholson Granite at between 0 -10m. Drill samples assayed for Cu, Pb, Zn, U and Th.

Geology map from this report details two intersecting NE/SW faults close to an unconformity between the South Nicholson Group and the Nicholson Granite. This lies within (or close to) the vicinity of Toro's licence.

The table below indicates the frequency of unconformities in the stratigraphy.

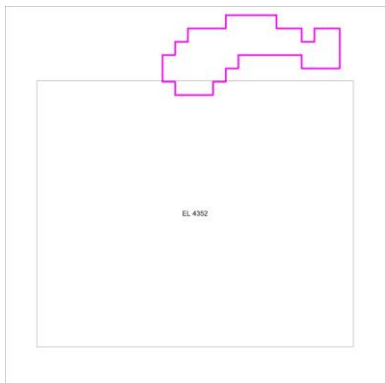
The conclusion was that none of the radiometric anomalies could be attributed to uranium, but conceded that weak anomalies over laterites could be in fact concealed mineralisation at depth.



The general stratigraphy of the area is summarised as follows:-

	Lower Cretaceous	(30 m)	
	-----		unconformity
Lower Cambrian	Bukalara Sandstone	(50 m)	
	-----		unconformity
Adelaidean	South Nicholson Group	(+ 5000 m)	
	(-----)		unconformity
	(Westmoreland Formation	(600 m)	
Carpentarian	(-----)		unconformity
	(Benmara Beds		
	(-----)		unconformity
	Nicholson Granite		
			intrusion & metamor
Lower Proterozoic	Murphy Metamorphics		

EL4352 Ashton Mining



CR1984-0236,CR1985-0289,CR1987-0006,CR1987-0218,CR1989-0266,CR1989-0288,CR1989-0289,CR1989-0654

Primarily looking for diamonds and gold with negative results. Only interest is lithologies on the only two drillholes on tenement. Samples were sieved and tested for diamond indicator minerals. They did fly a radiometric survey.

Drillholes on Toro's **EL28054** are as follows:

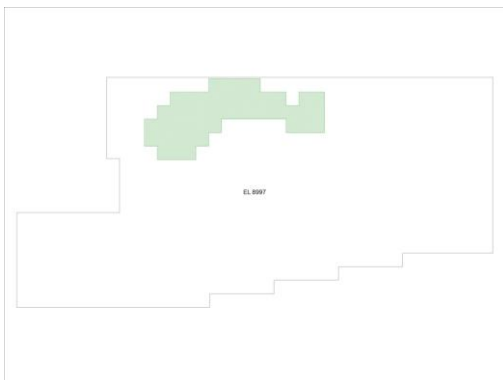
MD10 (RAB):	0-14m	overburden
	14-62m	porphyritic volcanic
	62-103m	micaceous schist and metasediment
MD12(RAB):	0-31m	weathered feldspathic sandstone
	31-102m	altered fine grained porphyritic volcanic
	102-215m	Proterozoic sediments

EL1339 Otter Exploration CR1978-0038



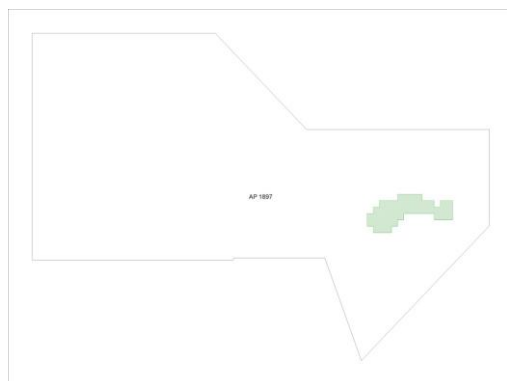
Followed up the water bore testing work that Esso did previously with a view to defining roll front-style uranium mineralisation in Tertiary sediments. Otter could not repeat the **300x background U3O8** results that Esso had reported. Two waterbores however had elevated uranium; Benmara 3 (12ppb U3O8) and Benmara 12 (97ppb U3O8) – north of Toro license. **Otter could not account for the discrepancy.** They drilled 13 holes – CO1 to 13 - (presumably mud rotary) for 869 m, of which five are within EL28054. Electric logs and gamma were collected for all holes. These identified basement of schist and cover of sandstone and clay, largely oxidised and therefore not particularly prospective for roll-front uranium. The Cenozoic section is also <100 m thick (and <50m in many holes), so also not appealing. Groundwater samples from bores are uniformly oxidised (Eh was measured). The drilling did not cover any of the principal magnetic structures or the proposed position of the unconformity, so it hasn't tested the basement model at all. Report is valuable reading.

BHP EL8997 CR1996-0239,CR1997-0260,CR1997-0325



Looking for sediment hosted base metals, BHP carried out 25Hz GEOTEM (1000m spacing) ground EM and magnetics. (Report has a good structural interp. Map – registered in mapinfo-) Found conductive anomalies (BW 1-7) which were interpreted to be hosted by the thin South Nicholson Group overlying Murphy metamorphics. Thus downgrading this area in terms of base metal prospectivity.

AP1897 IMC development CR1968-0030,CR1968-0033,CR1969-0062,CR1970-0035,CR1970-0038



Looking for Phosphorite in the Cambrian sediments to the South (combined report). Not much work carried out on this licence.

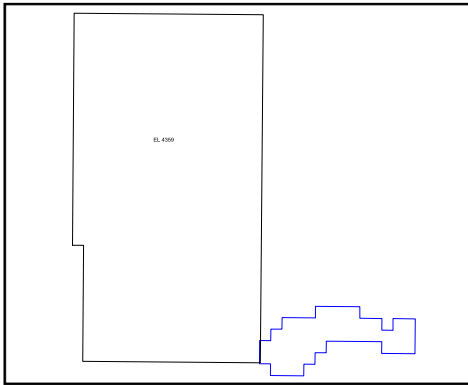
EL2232 Amoco CR1981-0033



Amoco were searching for McArthur River-type Cu Pb Zn stratabound mineralisation. The target was a regional gravity anomaly which turned out to be not pyritic shales but **volcanics of the Murphy Metamorphic Ridge**. Carried out helicopter gravity survey and surface geochemistry. Scintillometer readings were taken at each of the 36 gravity anomaly sites. No anomalies. **Pyritic/chloritic shales** were found east of Bowgan Creek. It was assumed these were **Proterozoic or Archean**. Ferruginous ridges thought to be iron formations or ultramafic lavas. **The unconformity between the Basement and upper proterozoic was examined with a scintillometer. Minor carnotite was found associated with pyritic shales and tuffs.** Abandoned tenement due to lack of McArthur Group sediments but acknowledged a **potential for Cu and U** but thought depth of weathering and lack of outcrop was a limiting factor.

Assays only done for Pb Zn and Hg.

EL4359 Ashton (see list above)



Looking for diamonds, Ashton flew an input survey and recorded conductive lithologies up to 8km in length.

Proposal:

EL28054 lies within Toro's MacArthur project and straddles the boundary of the Dunmarra Basin, an intracratonic basin unconformably overlying the sedimentary rocks of the Palaeo to Mesoproterozoic McArthur Basin to the north and the Georgina Basin to the south (NTGS). Toro's rationale for applying for this licence was to determine whether the Early Proterozoic Murphy tectonic ridge and associated metallogeny (located to the east) extended beneath the cover sediments to the west and into this tenement area.

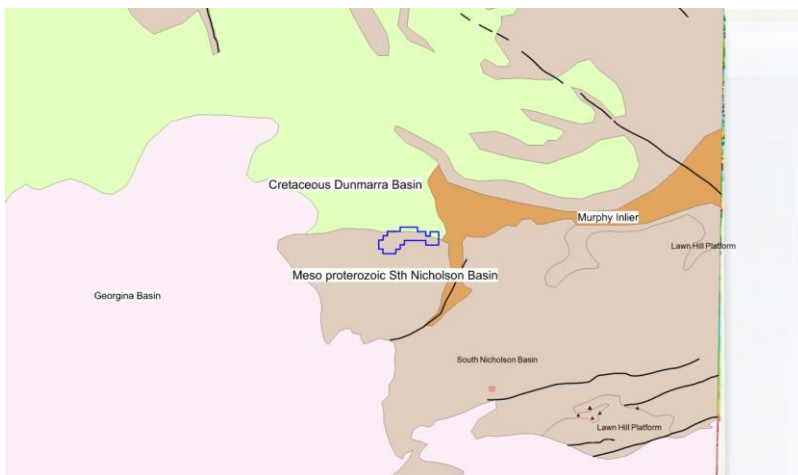


Figure 1 EL28054 over Geol. Regions (NTGS)

The Murphy metamorphics are interpreted (NTGS) as being unconformably overlain by sediments and volcanics of the Tawallah Group including the Westmoreland Conglomerate; host to the Westmoreland uranium district of the Southern MacArthur Basin area of QLD. Here uranium mineralisation is associated

with Mid Proterozoic sediments and igneous margins. Other uranium occurrences are described by NTGS¹ as being associated with the Westmoreland Conglomerate and volcanic boundaries, Conglomerate and basic dykes, within the Murphy metamorphics, the basal section of the Seigal Volcanics and within faults and fractures of the Murphy Metamorphics. Several of these occurrences are associated with alteration; hematite/quartz/sericite/muscovite/chlorite. Gold is often also present.

Surface outcrop in the tenement area is sparse and very little drilling information is available except for a few Ashton Mining holes in the south and some scattered water bores.

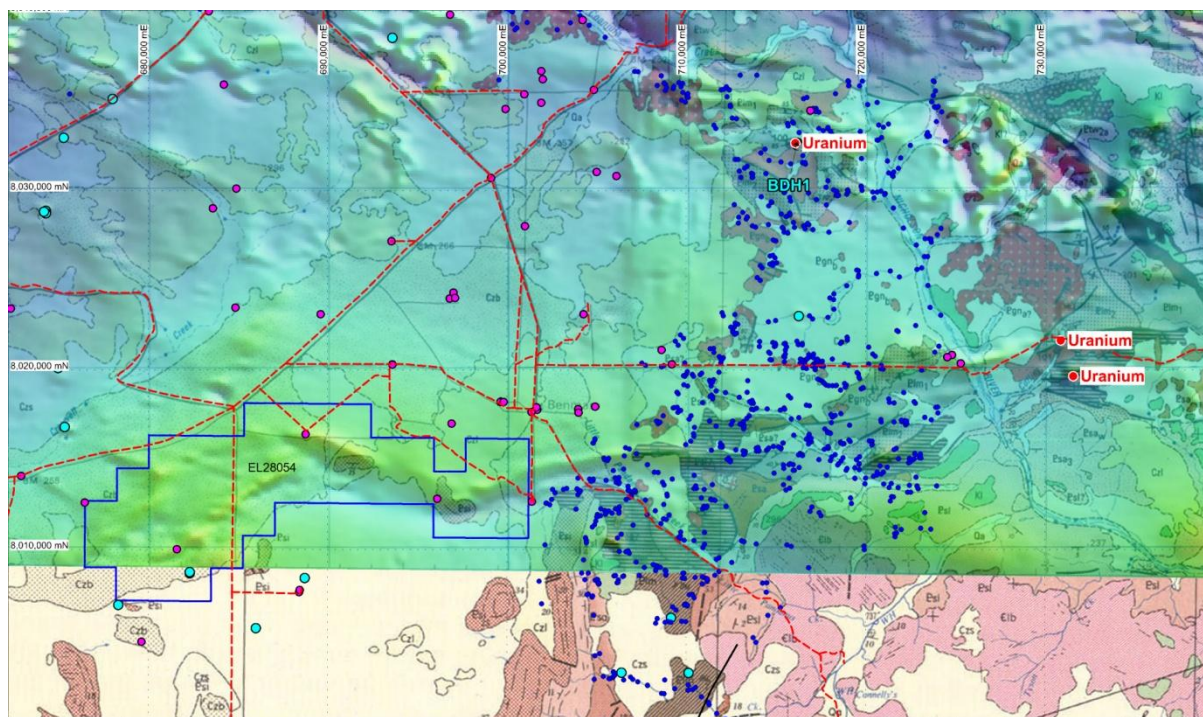


Figure 2 Existing open file Co. Drilling (L Blue), water bores (Pink) and surface geochem information (M Blue)

Geophysical information is limited to 1000m spaced EM and 300m spaced TMI and 300m spaced radiometrics in the southern half of the licence. BHP found conductive anomalies (BW 1-7) which were interpreted to be hosted by the thin South Nicholson Group overlying Murphy metamorphics.

Located to the east of Toro's EL28054 lies a linear magnetic ridge with a ENE trend (Fig. 3) This ridge coincides with what has been mapped at surface as Murphy Metamorphics by NTGS. Some 40km to the east (figure 2) lies two uranium occurrences discovered by Mines Administration. Secondary uranium minerals are associated with dilated faulted contact between the Lower Proterozoic Murphy Metamorphics and its intrusive counterpart; the Nicholson Granite. One sample recorded 2500cps on the scintillometer in a highly weathered brecciated and sheared metamorphics. Petrography on this specimen described kaolinisation and hematization of chert granophyres and rhyolite(?). Radioactivity was contained within veins within the kaolinite. Scans indicated secondary minerals including Carnotite and Torbonite as well as Brannerite.

¹ Calvert Hills 1:250,000 Metallogenic Map Series

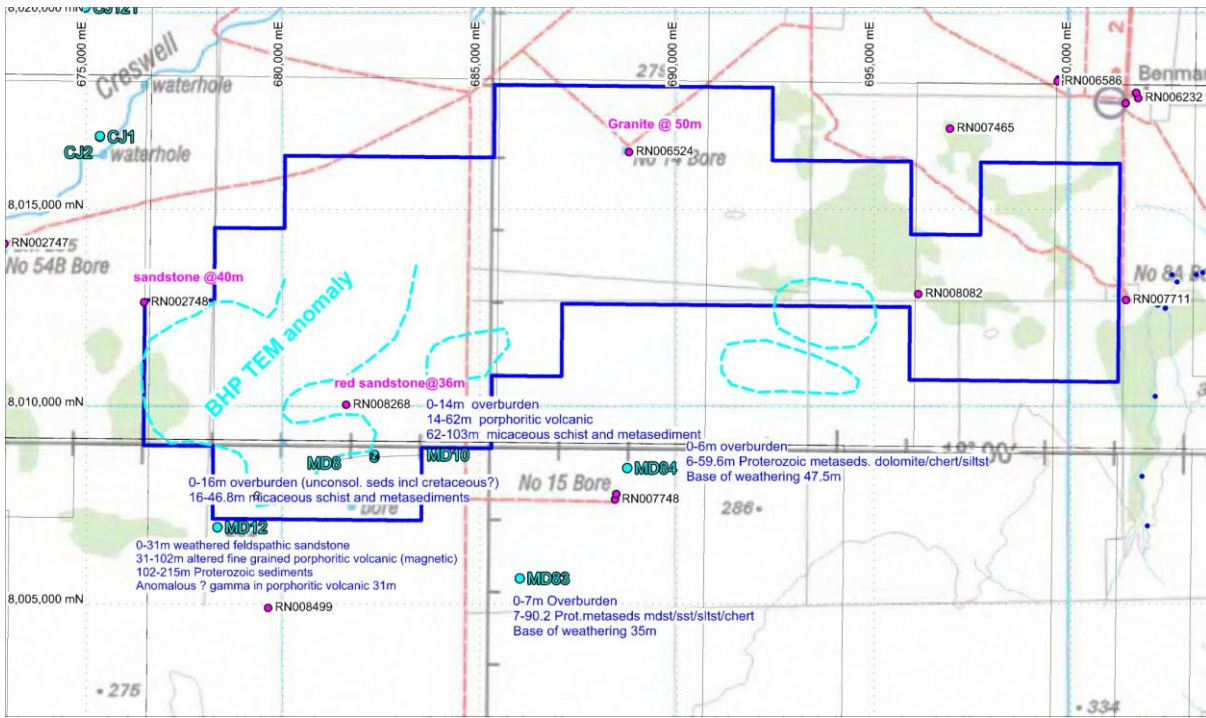


Figure 4 Pale blue lines indicate anomalous area from BHP GEOTEM survey. Depth could be 100m or 300m if there is resistive cover – D.Wilson.

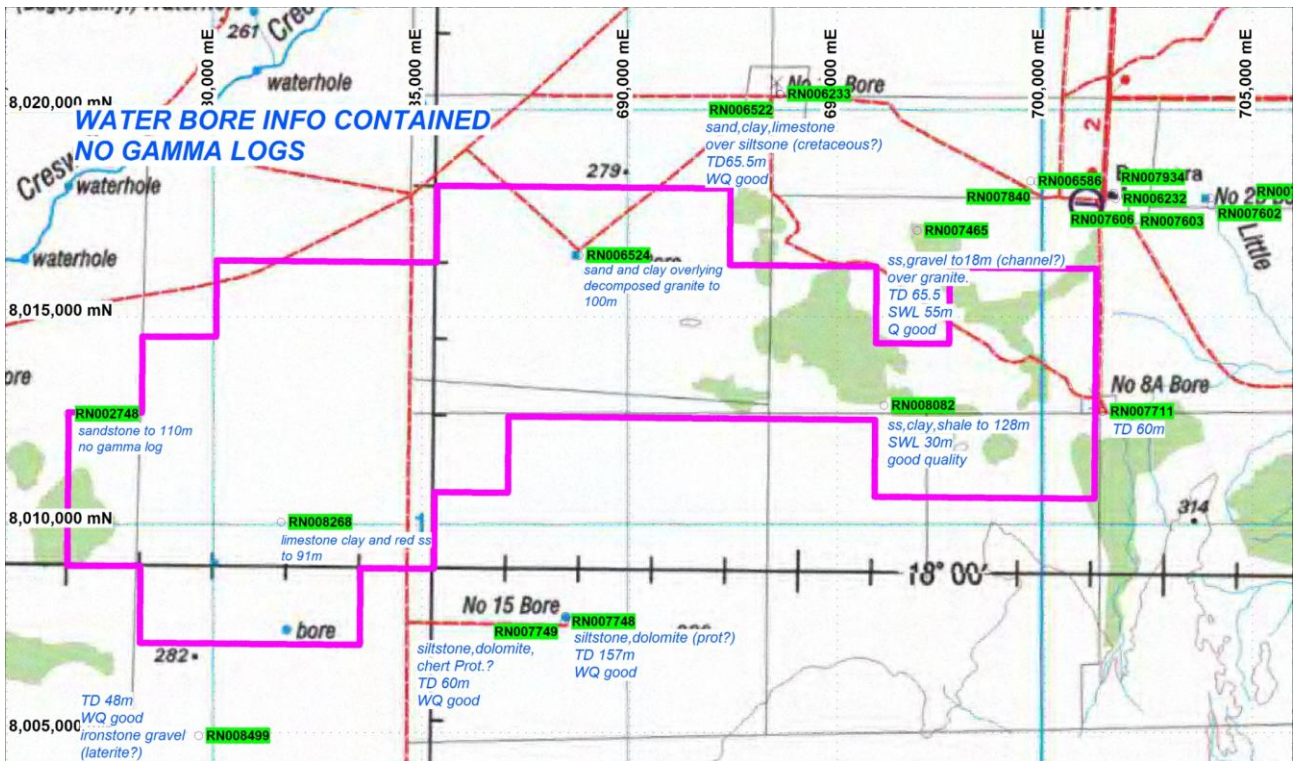


Figure 5 Water Bore info (from NRETA MAPS)

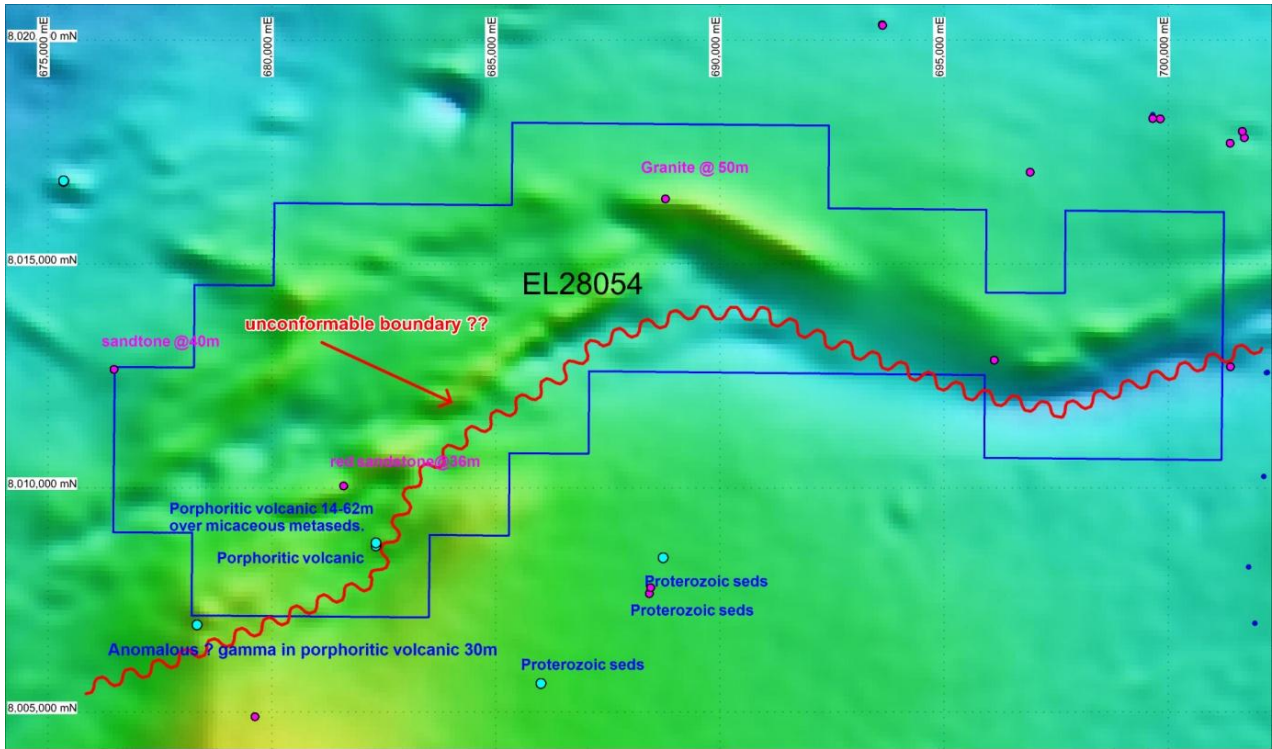


Figure 6 Basement Lithologies and interpreted unconformity location