



**U R A N I U M**  
E Q U I T I E S

**NABARLEK PROJECT- WEST  
ARNHEM JV  
(EL10176 & EL24371)**

**COMBINED REPORTING NO: GR 062**

**Annual Technical Report  
for the period 02/09/14- 01/09/15**

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## **NABARLEK PROJECT- WEST ARNHEM JV, WEST ARNHEM LAND, NORTHERN TERRITORY**

### **ABSTRACT**

The Nabarlek Project- WAJV is located in the western portion of the Arnhem Land Aboriginal Reserve, 28km east of the Gunbalanya (Oenpelli) Aboriginal Community and approximately 300km east of Darwin.

Nabarlek consists of two exploration licences, EL10176 and EL24371, with a total area of 383.8km<sup>2</sup>. Initially granted to Cameco Australia Pty Ltd (Cameco), the project is currently operated by Uranium Equities Limited (UEL) who is earning a 100% interest in the tenement.

Work completed during the year comprised RC drilling campaign (6 drillholes for 1329m) testing the GC-11 Target and the immediate western extension of the N147 mineralisation. Significant results include:

- 2m @ 2,354ppm U<sub>3</sub>O<sub>8</sub> from 135m downhole in drillhole NAR7537; and
- 5m @ 1,065ppm U<sub>3</sub>O<sub>8</sub> from 169m downhole in drillhole NAR7535, both from dolerite at Prospect GC-11.

Note that this mineralization is blind at surface, and there is no other deep drilling between GC-11 and the west end of N147 (around 1.5km), and the GC-11 alteration system extends for a further 2km to the west, again with no deep drilling. Step out drilling, in both directions, is warranted.

Significant hangingwall alteration, including illite, redox changes and illite- chlorite alteration, were observed in Kombolgie Sandstone in drillhole NAR7534, on the southern side of the GC-11 Target. This alteration appears unrelated to the dolerite hosted mineralization, and is typical of hangingwall alteration above an unconformity style uranium deposit. Follow up exploration is warranted.

The GC-11 target, amongst a series of other targets, were generated through a review of historical spectral and multi- element geochemical data collected during previous drilling programs. The combined spectral and multi-element data were used to characterise and map mineral assemblages and alteration halos associated with uranium mineralisation in the ARUF. Given the success at GC-11, follow up work on other targets generated in this review is warranted. In addition, resampling of drill holes not previously measured for SWIR data should be completed, and the SWIR database be interpreted for sandstone hosted alteration signatures

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## 1. INTRODUCTION

### 1.1 Location

The Nabarlek Project is located in the western portion of the Arnhem Land Aboriginal Reserve, 40km east of the Gunbalanya (Oenpelli) Aboriginal Community and approximately 300km east of Darwin. The Project area lies within the prospective Alligator Rivers Uranium Field and surrounds the Nabarlek Mineral Lease (Figure 1).

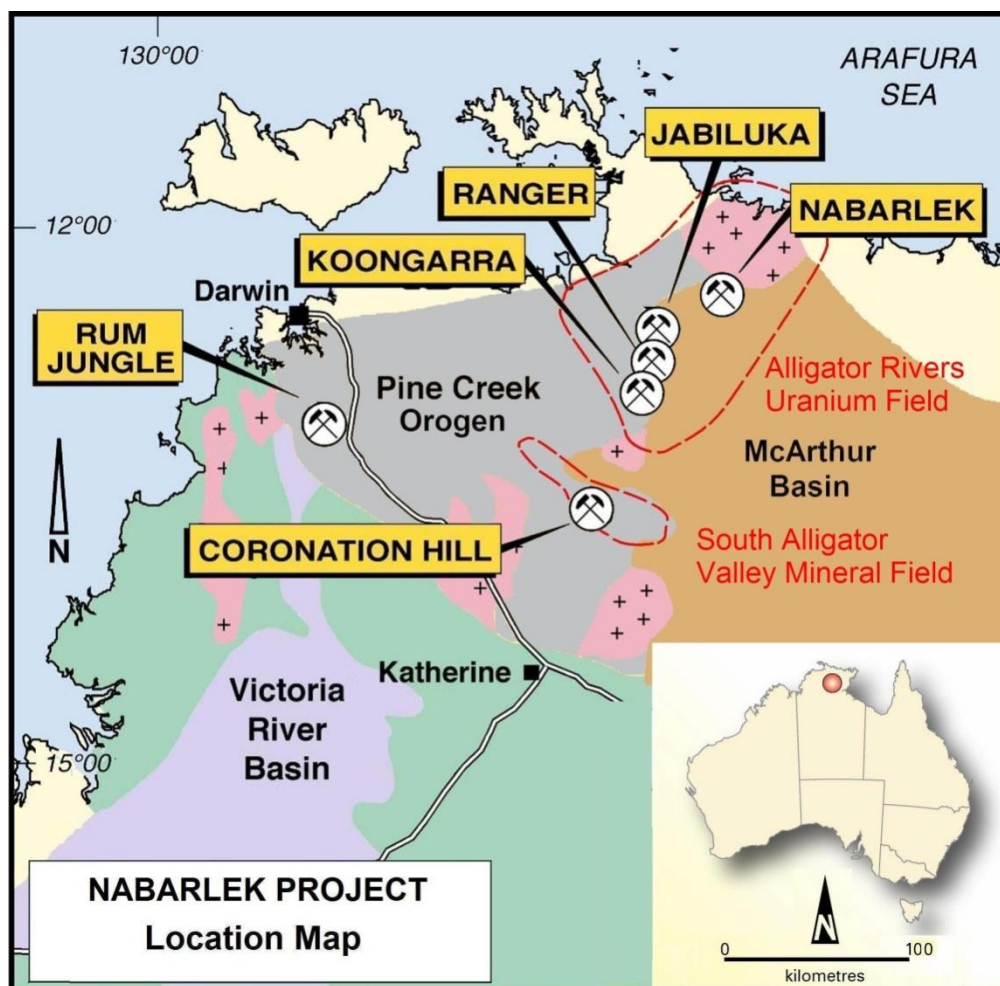


Figure 1: Location Map

The tenements contain several outliers of dissected sandstone Arnhem Land Plateau and escarpment country. The remainder of the project consists of gently undulating sandy plains covered by open savannah woodland with patches of open grassland and low shrubs. Thin remnants of weathered and lateritised flat-lying Cretaceous sediments form tablelands in the north-eastern portion.

The main drainage systems are Birraduk Creek and Cooper Creek, which flow to the northwest.



## 1.2 Tenement Status

The Nabarlek Project was originally comprised of three exploration licences (EL10176, EL24371 and EL24372) which were granted to Cameco Australia Pty Ltd on 1<sup>st</sup> September 2004 for an initial period of six years. The original area of grant was 423km<sup>2</sup>.

In December 2006 a Joint Venture agreement was signed between Cameco Australia Pty Ltd and Uranium Equities Limited (UEL) allowing UEL to earn a 40% interest in the three exploration licences. To participate in the Joint Venture, UEL agreed to sole-fund exploration expenditure for a number of years (through a wholly-owned subsidiary GE Resources Pty Ltd) to earn its 40% stake.

On 31<sup>st</sup> August 2008, 9 blocks of the original 134 blocks, were relinquished from EL10176 and EL24372 was surrendered in September 2008. The Project now consists of the two remaining licences, EL10176 and EL24371, for a total area of 383.8km<sup>2</sup> (Figure 2).

Late in 2012, UEL finalised an agreement to acquire Cameco Australia remaining 60% interest in the project. This acquisition gives UEL the opportunity to secure 100% ownership and full exploration management of a contiguous land holding in the heart of the Alligator Rivers Uranium Field. Uranium Equities has become the Manager and Operator of the Project.

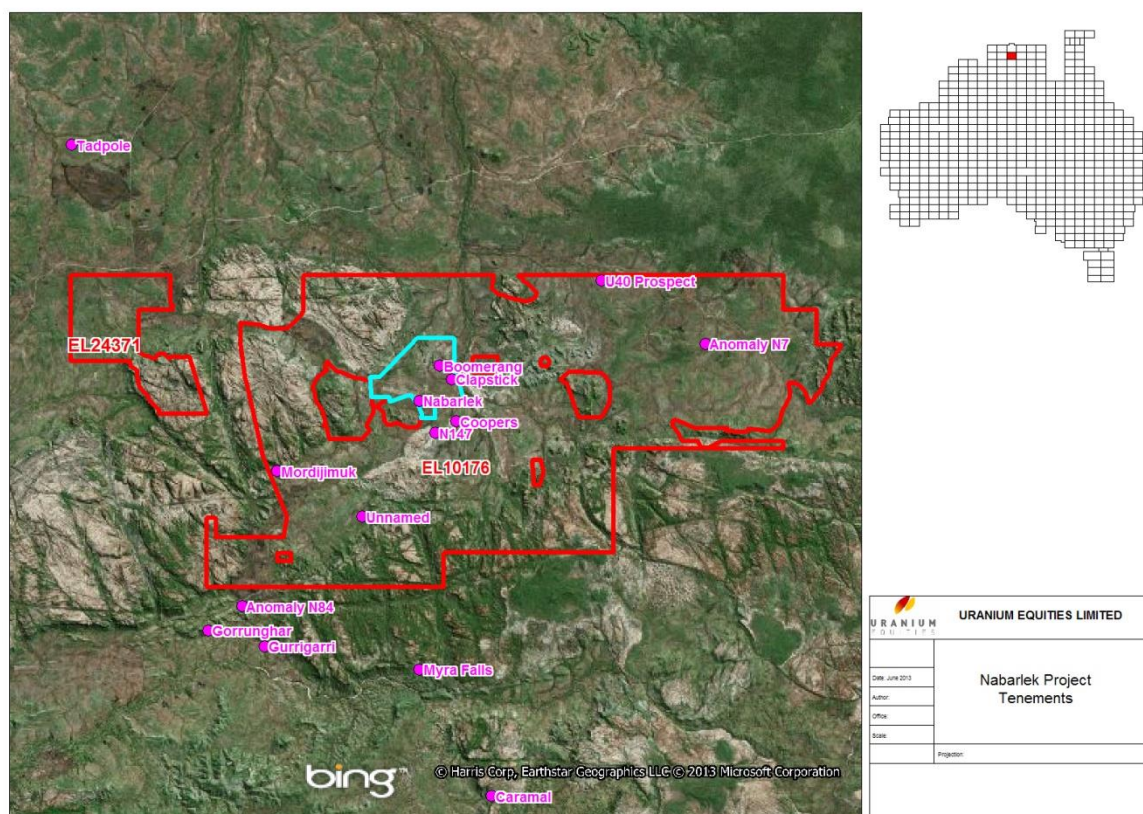


Figure 2: Nabarlek Project- WAJV: Current Ground Position

### 1.3 Aboriginal Heritage

The project area lies within the Arnhem Land Aboriginal Reserve and is therefore freehold Aboriginal Land. All personnel entering the project area are required to obtain the appropriate Northern Land Council (NLC) permit.

Permission to explore over Aboriginal Freehold land is gained via Exploration Agreements with the relevant Traditional Owners under the Commonwealth *Aboriginal Land Rights (NT) Act*.

Legislation requires that all sacred, cultural and heritage sites are initially documented by the Traditional Owners and NLC Anthropologists and Archaeologists prior to exploration commencing. This information is then utilised to determine 'No-Go' areas.

Uranium Equities Limited liaises with the Traditional Owners each year to discuss future exploration activities and have developed a strong professional relationship, which includes employment in exploration and rehabilitation activities.

### 1.4 Access

Access to the site is via the unsealed and seasonal Oenpelli – Maningrida road from Cahill's Crossing at the East Alligator River to the 'Three Ways' intersection to the Coburg Peninsula. From there, access is via the old Nabarlek Mine access road to the Nabarlek Mineral Lease.

The Nabarlek Mineral Lease is central to the Project area with reasonable dry season access along 4WD bush tracks throughout the project area.

Access to the Nabarlek site is also possible using a light plane direct from Darwin, to land on the all-weather sealed airstrip at the Nabarlek Mineral Lease. Uranium Equities Limited has established a semi-permanent field camp adjacent to the airstrip (Figure 3).



**Figure 3: Aerial View of Nabarlek Camp and Airstrip**



## **2. PROJECT GEOLOGY**

### **2.1 Conceptual Model**

The primary focus of exploration on Nabarlek is for the discovery of a high grade Nabarlek-style uranium deposit. Nabarlek is an unconformity-associated uranium deposit whereby mineralisation is concentrated within structural zones, spatially associated with a regional unconformity between flat-lying siliciclastic basinal sediments and the underlying metamorphic basement rocks.

The highly prospective nature of the Alligator Rivers Region for this type of mineralisation is demonstrated by the presence of economic uranium deposits not only at Nabarlek, but also at Ranger, Jabiluka and Koongarra.

In addition to uranium, significant gold, platinum and palladium resources are present at existing uranium occurrences within the Alligator Rivers Uranium Field (Ranger, Jabiluka, Koongarra and Coronation Hill/South Alligator Valley-style deposits) suggesting that economic mineralisation of gold and PGE's (Platinum Group Elements) associated with economic or sub-economic uranium may also be present within the project area.

### **2.2 Geological Setting**

The Nabarlek Project area is located within the eastern margin of the Neoarchaeoan and Palaeoproterozoic Pine Creek Orogen in a region that has been subdivided into the Nimbuwah Domain of the Alligator Rivers region.

The oldest rocks are a sequence of Early-Proterozoic metamorphosed sediments (semi-pelites), schists and amphibolites termed the Myra Falls Metamorphics. This unit is considered to be stratigraphically equivalent to the Cahill Formation in the western part of the Alligator Rivers Uranium Field and forms the host lithologies of the Nabarlek Deposit.

The Kombolgie Subgroup is the basal unit of the late Palaeo – Mesoproterozoic Katherine River Group of the McArthur Basin. The subgroup consists of sandstone units called the Mamadawerre Sandstone, Gumarrirnbang Sandstone, and Marlgowa Sandstone, which are divided by thin basaltic units called the Nungbalgarri Volcanics, and Gilruth Volcanics. Mamadawerre Sandstone unconformably overlies the basement sequences described above, forming an extensive inaccessible plateau.

The Oenpelli Dolerite is the most pervasive mafic intrusive suite to affect the Alligator Rivers region and is the youngest Proterozoic rock unit exposed. It intrudes various units Neoarchaeoan and Palaeoproterozoic units, and the Kombolgie Subgroup, forming magnetic sills, dykes, lopoliths, and laccoliths.

These intrusive events had a pronounced thermal effect within the Kombolgie Subgroup, with the promotion of fluid flow and aquifer or aquitard modification. Localised effects in the sandstone include silicification, desilicification, chloritisation, sericitisation, and pyrophyllite alteration. A characteristic mineral assemblage of prehnite-pumpellyite-epidote has formed in the quartzofeldspathic basement rocks adjacent to the intrusions.

Mineralisation in the Nabarlek region is believed to be at least partially controlled by the structural regime through the area. Deformation since deposition of the Katherine River Group includes transpressional movement along steep regional-scale strike-slip faults and possibly some shallow thrusting. These regional faults follow a pattern of predominantly north – northwest trends.





### **3. PREVIOUS INVESTIGATIONS**

#### **3.1 Exploration by Queensland Mines Pty Ltd: 1969 – 1998**

The area was previously held by Queensland Mines Pty Ltd (QMPL) with investigations consisting of airborne radiometric and magnetic surveys, regional geochemical programs, ground total count radiometric surveys, reconnaissance exploration and mapping with some facilitated by surveyed grids.

The Nabarlek Deposit was discovered by radiometric survey and ground follow-up in June 1970. QMPL's exploration was curtailed in early 1973 when the Federal Government imposed moratorium on exploration pending a resolution of the issue of Aboriginal Land Rights. No further exploration work was completed until 1988.

EL2508 was granted to QMPL on 29<sup>th</sup> June 1988 and eventually expired on 28<sup>th</sup> June 1998. During QMPL's tenure they completed airborne geophysical surveys, geological mapping, soil sampling, ground radiometrics, radon track etch surveying, trenches, rotary air blast (RAB) drilling, percussion and diamond drilling.

Significant, but sub-economic uranium mineralisation in strong to moderately altered zones was intersected at a number of prospects. Many other anomalies were discovered but were discounted.

#### **3.2 Exploration by AFMEX, Cameco, SAE Australia JV: 1998 – 2003**

In 1998, four months prior to expiry of EL2508, a joint venture partnership consisting of 25% Afmeco Mining and Exploration Pty Ltd (AFMEX) as the operating partner, 50% Cameco and 25% SAE Australia Pty Ltd acquired the tenement from QMPL. Exploration Retention Licences (ERLs) were lodged over those portions of EL2508 that were considered the most prospective and the remainder was permitted to expire. On 20<sup>th</sup> May 1999, the joint venture partners were granted ERL150 – 152.

Investigations consisted predominantly of reverse circulation and diamond drilling programs at some of the more advanced prospects including SMLB, N147 and U65 Prospects. While significant alteration and some minor zones of mineralisation were encountered, all three exploration retention licences were surrendered.

### **4. EXPLORATION BY CAMECO AND URANIUM EQUITIES LTD**

Cameco lodged an application for EL10176, covering the former EL2508 and ERL150 – 152 in June 1999. Grant of title was given on 1<sup>st</sup> September 2004, as three separate tenements, EL10176 the largest central portion, and two smaller titles (EL24371 and EL24372) separated by areas of non-consent land.

#### **4.1 2004 Field Season**

Investigations during 2004 consisted of various data compilations and reviews of historical data, but included minor field reconnaissance, sampling and geological mapping.

Full details were documented in Potter (2005).

#### **4.2 2005 Field Season**

In 2005, an airborne hyperspectral survey and a TEMPEST survey were flown. In addition, airborne radiometric and magnetic survey of the S27 and N84 Prospect areas was completed. The TEMPEST survey identified a number of targets that were highlighted for further work.

Full details were documented in Doyle et al (2006).

### 4.3 2006 Field Season

Investigations during 2006 consisted of a reverse circulation and diamond drilling program and a regional TEMPEST survey over the western, central and eastern portions of the project area.

A trial SAM (sub-audio magnetic) survey by GAP Geophysics Australia Pty Ltd (GAP) was completed to the southeast of the N147 Prospect. This survey was aimed at determining whether extensions of the Nabarlek Shear could be imaged below sandstone towards the south-east of the prospect. The results of the SAM survey were inconclusive.

Full details were documented in Otto et al (2007).

### 4.4 2007 Field Season

In 2007, Uranium Equities participated in the exploration program.

Investigations during the field season consisted of helicopter supported diamond drilling, RC drilling with diamond tails and aircore drilling. Regional outcrop sampling was also completed.

Drilling at the N147 Prospect intersected dolerite-hosted uranium mineralisation. Further work is required at the prospect to better define the outline of the mineralisation, and to test for further potential of dolerite related uranium mineralisation along the Gabo Fault Trend.

**Table 1: 2007 Best Drilling Results**

Drillhole	MGA_E	MGA_N	Azi	Dec	TD	Best Result
NARD6016	318355	8637581	225	-60	200.3	22m @ 0.12% U <sub>3</sub> O <sub>8</sub> from 67m
NARD6017	318397	8637621	225	-60	242.7	21.1m @ 0.37% U <sub>3</sub> O <sub>8</sub> from 115.1m

The regional AC drilling did not intersect any highly anomalous uranium results but outlined anomalous uranium and base metal at the N23, U65 North and Contact Prospect areas, providing impetus for further exploration in the areas.

Full details of the exploration investigations were documented in Otto et al (2008).

### 4.5 2008 Field Season

In 2008, the exploration program consisted predominantly of an extensive systematic drilling campaign targeting the extent of the north northwest trending Nabarlek Structural Zone. A total of 85 reverse circulation holes for 7475m and 532 aircore drillholes for 8101m were completed.

A detailed airborne radiometric and magnetic survey completed at the U40/42 Prospect area for 321 line kilometres and a test VTEM survey by Fugro of 35.8 line kilometres.

Further drilling at the N147 Prospect produced significant intercepts and the first anomalous geochemical uranium results were outlined from shallow aircore traverses at Coopers and Coopers South Prospects.

**Table 2: 2008 Best Drilling Results**

Drillhole	MGA_E	MGA_N	Azi	Dec	TD	Best Result
NAR6318	318288	8637565	225	-60	156	34m @ 0.12% U <sub>3</sub> O <sub>8</sub> from 109m

Full details were documented in Otto and Mathieson (2009).

## 4.6 2009 Field Season

The exploration program for 2009 consisted of drilling of 417 aircore drillholes for 7,617m. An airborne radiometric and magnetic survey was completed at the N84 and N23 Prospects and a Sub Audio Magnetic (SAM) survey at the N147 Prospect. Minor reconnaissance mapping and sampling was also completed.

Full details were documented in Otto and Mathieson (2010).

## 4.7 2010 Field Season

The exploration program for 2010 included drilling of 42 reverse circulation drillholes for 6,158m, 91 aircore drillholes for 1,394m and 4 diamond drillholes for 486.7m. In addition, a gravity survey that consisted of 959 stations and regional sampling and reconnaissance mapping programs were completed.

Reverse circulation drilling was focussed on follow up of geochemical and structural targets throughout the project area. Significant results were encountered at the Coopers and U40 Prospects.

**Table 3: 2010 Best RC Drilling Results**

Drillhole	MGA_E	MGA_N	Azi	Dec	TD	Best Result
NAR7374	320036	8638041	135	-60	154	6m @ 0.33% U <sub>3</sub> O <sub>8</sub> from 23m
NAR7386	319980	8637901	135	-60	142	23m @ 0.20% U <sub>3</sub> O <sub>8</sub> from 40m
NAR7389	327140	8644994	090	-60	220	5m @ 1.20% U <sub>3</sub> O <sub>8</sub> from 78m

Diamond drilling was conducted at the U40 Prospect to follow up on mineralisation intersected in NAR7389.

**Table 4: 2010 Best Diamond Drilling Results**

Drillhole	MGA_E	MGA_N	Azi	Dec	TD	Best Result
NAD7492	327141	8644994	090	-60	124	6.8m @ 6.71% U <sub>3</sub> O <sub>8</sub> from 75m
NAD7493	327222	8644998	270	-60	110.6	4.8m @ 1.85% U <sub>3</sub> O <sub>8</sub> from 80.4m

The ground gravity surveys were found to be influenced primarily by variations in overburden thickness and composition. This helped distinguish sub-cropping structure as such features undergo preferential weathering.

Full details and discussion on the work program can be found in the Annual Technical Report (Urbatsch and Mathieson, 2011).

## 4.8 2011 Field Season

The exploration program for 2011 included diamond drilling and a ground gravity survey focussed on the Quarry Fault Zone.

Drilling at the Coopers Prospect investigated the nature of mineralisation, basement lithology and structures intercepted by 2010 reverse circulation drilling. The drilling program at the U40 Prospect was designed to determine the size, geometry and controls of high grade mineralisation intercepted by 2010 RC and diamond drilling.

Two holes were drilled at Coopers and 11 holes were drilled at the U40 Prospect for a total of 1991.7m.

**Table 5: 2011 Best Diamond Drilling Results**

Drillhole	MGA_E	MGA_N	Azi	Dec	TD	Best Result
NAD7496	319976	8637909	135	-60	114.4	20m @ 0.22% U <sub>3</sub> O <sub>8</sub> from 40.5m
NAD7498	327219	8645032	210	-60	231.5	2m @ 0.05% U <sub>3</sub> O <sub>8</sub> from 25.5m

The ground gravity program was completed along the entire length of the Quarry Fault Zone. A structural interpretation of the various geophysical products generated from the survey has identified a series of northwest trending structures which cross-cut the northerly trending structures sympathetic to the Quarry Fault Zone. Combined with previously acquired aeromagnetic datasets, several other potential targets analogous to U40 Prospect have been identified.

Details can be found in the Annual Technical Report by Kuldkepp et al (2012).

## 4.9 2012 – 2013

No field work was completed however office based research and targeting continued.

Investigations included reprocessing and interpretation of geophysical datasets and a review of historical geological data to generate potential exploration targets in the region.

Aurel Consulting was commissioned with constructing 3D models of key target areas in the Nabarlek region. A completion report has been received which includes 3D models of the Nabarlek ML region including SMLB, Coopers, Coopers South and N147 Prospects areas, plus separate models for the U40 – U42 Prospect areas.

Details can be found in the Annual Technical Report by Williamson (2014).

## 4.10 2014 Field Season

Work completed in the 2104 field season comprised (Williamson, 2014):

- An RC drilling program completing 23 drillholes for 2998m examining priority target areas at Coopers, Coopers South, U39 and the U40 Prospect areas. Significant results are listed in Tables Six and Seven;
- Field reconnaissance examining potential future targets

Field XRF results using a 100ppm U<sub>3</sub>O<sub>8</sub> cut-off are summarised below.

**Table 6: 2014 Best RC Drilling Results- pXRF analysis**

Drillhole	MGA_E	MGA_N	Azi	Dec	TD	Best Result
NAR7510	320331	8637507	135	-60	84	10m @ 217ppm U <sub>3</sub> O <sub>8</sub> from 35m
NAR7514	327119	8644952	268	-60	156	8m @ 297ppm U <sub>3</sub> O <sub>8</sub> from 92m
NAR7520	327201	8645048	268	-60	156	7m @ 1781ppm U <sub>3</sub> O <sub>8</sub> from 46m
NAR7527	327117	8644900	268	-60	144	6m @ 935ppm U <sub>3</sub> O <sub>8</sub> from 19m
NAR7528	327188	8644898	268	-60	186	12m @ 509ppm U <sub>3</sub> O <sub>8</sub> from 80m

**Table 7: 2014 Best RC Drilling Results- Chemical Analysis**

Drillhole	MGA_E	MGA_N	Azi	Dec	TD	Best Result
NAR7520	327201	8645048	268	-60	156	7m @ 0.27% U <sub>3</sub> O <sub>8</sub> from 46m
NAR7527	327117	8644900	268	-60	144	6m @ 0.13% U <sub>3</sub> O <sub>8</sub> from 19m
NAR7528	327188	8644898	268	-60	186	9m @ 0.06% U <sub>3</sub> O <sub>8</sub> from 79m

## 5. WORK COMPLETED DURING THE CURRENT REPORTING PERIOD

Work completed in the current reporting period includes;

- An RC drilling program completing 6 holes for 1329m examining the GC-11 and GC\_26 priority target areas; and
- An alteration study which aimed to characterise the spectral and lithogeochemical signature of the Nabarlek orebody with the purpose of identifying 'near-miss' opportunities in historical drilling on the wider Nabarlek Project;

**Table 8: 2015 RC Drilling**

Hole Type	Hole Number Range	No. of Holes	Total Metres
RC	NAR7532 – NAR7537	6	1329
<b>Grand Total</b>	-	<b>6</b>	<b>1329</b>

### 5.1 Nabarlek Project Alteration Study

During the period the Company commissioned a research study into the short wavelength infrared (SWIR) spectra and lithogeochemical signature of the Nabarlek orebody. In addition to characterising the alteration signature at Nabarlek, the study aimed to use this model to identify any 'near-miss' opportunities from historical drilling on the wider Nabarlek Project, including Namarrkon.

The alteration study examined historical data (SWIR, multi-element geochemistry and Pb isotope data) and collected new spectral data on selected historical drill samples (RC chips and core) including holes recently drilled by UEQ on the Nabarlek Project.

The study identified a distinctive SWIR 'halo' associated with the Nabarlek orebody with accompanying elevated trace element (Li - V  $\pm$  Mo) and major element (Na, Ca and Mg) depletion and enrichment patterns. These distinctive signatures reflect Mg-rich chlorite minerals which comprise the proximal alteration assemblage at Nabarlek. More distal to the deposit, the chlorites become more Fe-rich and the trace element signature becomes more Ca-Na dominant.

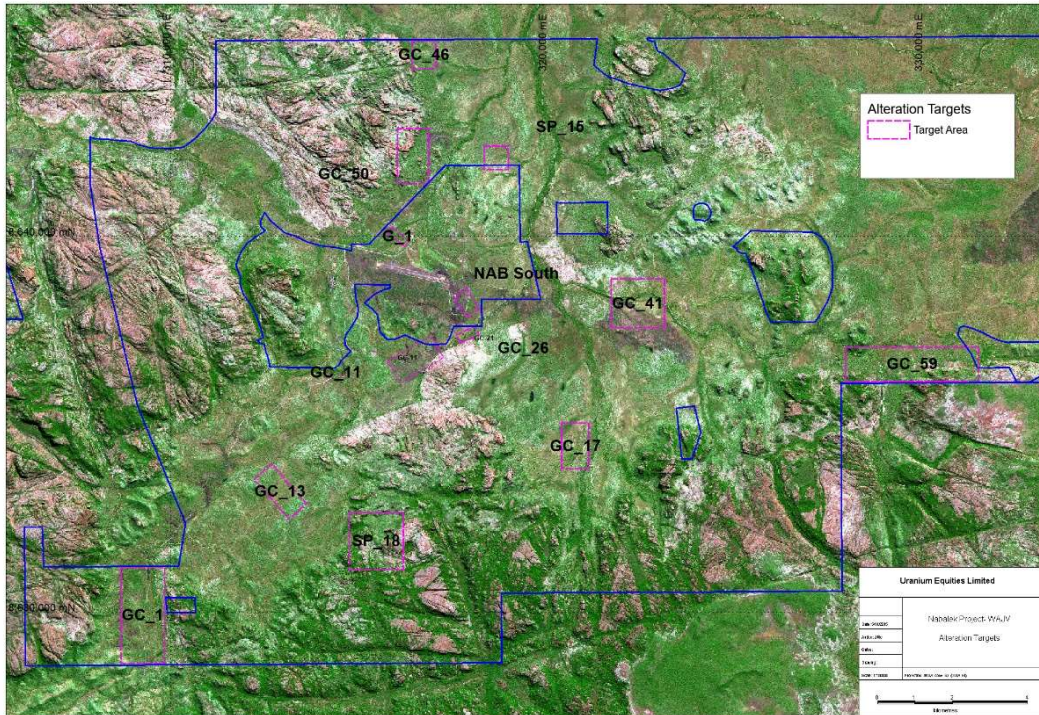
Initially anomalous areas were identified, typically as:

- Geological anomalies- in this case, late offsets in the base of Kombolgie;
- Geochemical anomalies, either U bearing, Mo anomalous, V anomalous (including normalising for host rock background V, or Li anomalous, representing increased chlorite alteration); and
- SWIR spectral anomalies, initially either phengitic sericite bearing, which appears either coincident with, or very proximal to, U mineralisation; and intense acid alteration.

Individual anomalies were then grouped into Targets, either as individual anomalies, or where several overlapped, as a combined system. 12 Priority Targets were identified, as shown in Figure 4.

Targets G\_1, GC\_11, GC\_26 and GC\_59 were considered to be high priority targets. While alteration was identified in drilling on EL24371, no priority targets were identified.





**Figure 4: Alteration Targets**

## 5.2 RC Drilling Program

Six RC drill holes (1329m) were drilled to test two target areas generated in the Nabarlek Project Alteration Study (Figure 5):

- Two holes (NAR7532 and NAR7533) were drilled to test target GC-26, the western extensions of the N147 mineralisation, where historical shallow drilling indicated N147 style alteration extended westwards along strike; and
- Four holes (NAR7534 to NAR7537) were drilled in a traverse across the GC-11 alteration target, located 1500m west of N147, within the same dolerite host.

Drilling was completed by Profile Drilling using a Schramm RC rig with 900cfm/ 350psi on board air and 2400cfm/ 1000psi Booster and 1350/500psi Auxillary compressors. Holes were surveyed at around 50m intervals using a single shot camera in rods, with a stainless steel rod located immediately behind the hammer. Collar locations were measured using a standard standard hand-held GPS.

Bulk samples were collected on 1m intervals and set out in a regular manner at the drill site for geological logging and sampling. A nominal 3kg subsample was split at the rig every 1m for subsequent assay if required. Routine logging includes recording sample quality, wet/dry status and recovery. Geological logging includes recording lithology, deformation, alteration, sulphide mineralisation and any veining. Drillholes NAR7535 and 7537 were geologically logged during the reporting period; holes NAR7532 to NAR7534, and NAR7536 will be logged and reported in the following year.

Initially 4m composite spear samples were collected from the RC bulk bags for a preliminary field analysis utilising a hand-held portable Niton XL3t XRF Analyser (Serial No: 30344) and a scintillometer. The XRF Analyser does not replace traditional laboratory-based analysis; however it provides an effective screening tool for selecting samples for traditional analysis.

Based on the outcome of the field XRF analysis and field scintillometer readings, selected 1m samples were forwarded to NTEL (Darwin) for analysis. A total of 246 1m samples were submitted to be assayed for Al, Sc, K, Na, Mg, Ca, Ti, Th, Zr, U, Li, V, Cu, Pb, Ag, As, Bi, Mo



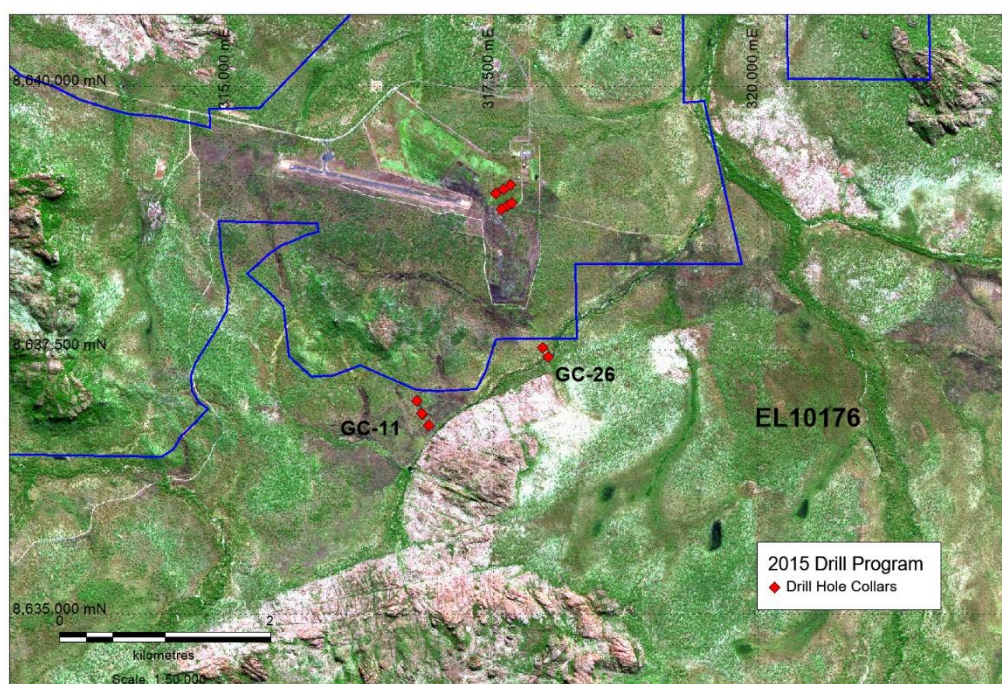
and Sb by ICPMS following a 4 acid digest. In addition, Pb isotopes were measured using a partial leach technique, where isotopes were read by ICP-MS from a weak nitric acid leach on an aliquot of the crushed fraction (i.e., the coarse residue, not the pulp).

All samples were logged for Short Wave Infra- red absorption features, using an ASD Teraspec machine, with results processed by Mineral Mapping.

Appendix 1 contains all the data files associated with the drilling campaign:

- Collar (NAB\_NTSL4\_COLL2014A.TXT)
- Survey (NAB\_NTDS4\_SURV2014A.TXT)
- Geology (NAB\_NTDL4\_GEO2014A.TXT)
- Lab Assay (NAB\_NTDG4\_ASS2014A.TXT)
- Field XRF Assay (NAB\_NTDG4\_ASS2014A\_1.TXT)
- SWIR Spectral Data (NAB\_NTDL4\_SPEC2014A.TXT)
- Scintillometer data (NAB\_NTDL4\_GEO2014A.TXT)
- Drill hole metadata (NAB\_NTDL4\_DRIL2014A.TXT)
- Drill sample recovery (NAB\_NTDL4\_CORE2014A.TXT)
- Verification List (NAB\_Verification\_List\_2014.TXT)

Cross sections are attached as Enclosures One and Two.



**Figure 5: Nabarlek Project 2015 RC Drilling Locations**

### **Target GC 26**

Drilling comprised a fence of two holes angled to the south east, looking to test for extensions of the N147 uranium mineralisation. The fence was located 150m south west of the nearest deep drill hole, and was designed to test the dolerite just above the position where the dolerite cuts the Kombolgje- basement unconformity, similar to the mineralisation at N147. Shallow historical drilling reported anomalous Li and Mo, suggesting U related alteration extends through this position.

Drilling intersected Oenpelli Dolerite, dipping at around 45° to the NW, cutting through basement and sandstone lithologies, with the unconformity truncated at a position close to the basement contact in hole NAR7533 (The deeper hole).

The ASD data indicates a zone of moderate short wavelength chlorite (sudritic?) is developed just above basement in the deeper drill hole, but only weak chlorite in the upper hole (NAR7532). The sandstone shows background kaolinite alteration. Very acidic illite is developed in the basement in NAR7533, but more phengitic material is developed in basement in NAR7532. Weak illite is developed in the upper part of the dolerite.

No chemical analyses are available; the portable XRF data suggests no significant V alteration is observed, other than a weak anomaly at the top of the moderate chlorite alteration, and another at the base of cover, both in NAR7533. No anomalous U values were reported.

In conclusion, while a moderate chlorite alteration zone is developed in dolerite, and strong acid sericite alteration in the basement, the chlorite alteration would appear to be marginal to a U mineralisation system. While anomalous V and Mo were reported from 37m at the base of historical hole NAA6491 (the basis of the target), no anomalous V was observed in the pXRF. This would appear to close off the immediate south western extensions of the N147 mineralisation.

### **Target GC 11**

Drilling comprised a fence of three holes angled to the south east, looking to test the GC\_11 geochemical target (highly anomalous Li, V, Mo and Pb isotopes) for N147 style uranium mineralisation. A fourth hole was subsequently drilled as a scissor hole next to NAR7535. The fence was located 1.3km south west of the drilling at GC-26, and was designed to test the dolerite just above the position where the dolerite cuts the Kombolgie- basement unconformity. A schematic section is drawn in Figure 6.

Drilling intersected Oenpelli Dolerite, dipping at around 40° to the NW, cutting through basement and sandstone lithologies, with the unconformity pinch-out intersected at 193m downhole in NAR7535 (that is, the hole intersected 1m of sandstone below dolerite and then hit basement). NAR7534, the south easternmost hole intersected a thick sequence of sandstone with basement at the bottom of hole. Note that the unconformity depth in NAR7537 is 165m, suggesting there is a significant fault offset (around 25m) between hole NAR7535 and the slightly offset NAR7537. The orientation of this fault is not known at this stage.

Significant uranium was reported from 169- 186m in NAR7535, and from 124- 158m in NAR7437. Intersections are listed in Table 8. The mineralisation is hosted in Oenpelli Dolerite.

**Table 9: 2015 Significant Intersections**

Drillhole	MGA_E	MGA_N	Azi	Dec	TD	Significant Intersections
NAR7535	320331	8637507	135	-60	84	5m @ 1065 ppm U <sub>3</sub> O <sub>8</sub> from 169m
				including		1m @ 2143ppm U <sub>3</sub> O <sub>8</sub> from 172m
						1m @ 699ppm U <sub>3</sub> O <sub>8</sub> from 177m
						1m @ 322ppm U <sub>3</sub> O <sub>8</sub> from 182m
NAR7537	327119	8644952	268	-60	156	2m @ 875ppm U <sub>3</sub> O <sub>8</sub> from 130m
						2m @ 2,354ppm U <sub>3</sub> O <sub>8</sub> from 135m
						3m @ 325ppm U <sub>3</sub> O <sub>8</sub> from 141m
						3m @ 653ppm U <sub>3</sub> O <sub>8</sub> from 147m
						1m @ 802ppm U <sub>3</sub> O <sub>8</sub> from 154m
						1m @ 232ppm U <sub>3</sub> O <sub>8</sub> from 157m

The ASD data indicates a zone of moderate to strong short wavelength chlorite (sudoitic?) is developed from around 130m to the unconformity, and then is patchily developed to the end of hole. A similar zone is developed in NAR7537, but only weak chlorite is measured in dolerite in NAR7537. A weak short wavelength illite is recorded across the dolerite, and patchy phengite in the basement (NB: the basement here is mostly amphibolite). Elevated V is recorded at shallow depths in the dolerite, probably reflecting the granophyric unit in the dolerite, rather than chlorite or hematite alteration (possibly hosts for the V). Highly elevated Li is recorded in dolerite and basement from NAR7535, and the bottom of NAR7537, in and surrounding the U mineralisation. There is no significant Mo associated with the significant U mineralisation, but there are narrow zones of highly anomalous Mo recorded at shallow depths in NAR7535 and 7537, with weakly anomalous U. Note this zone is coincident with or just below the anomalous V reported above, and interpreted to be a primary feature in the granophyre.

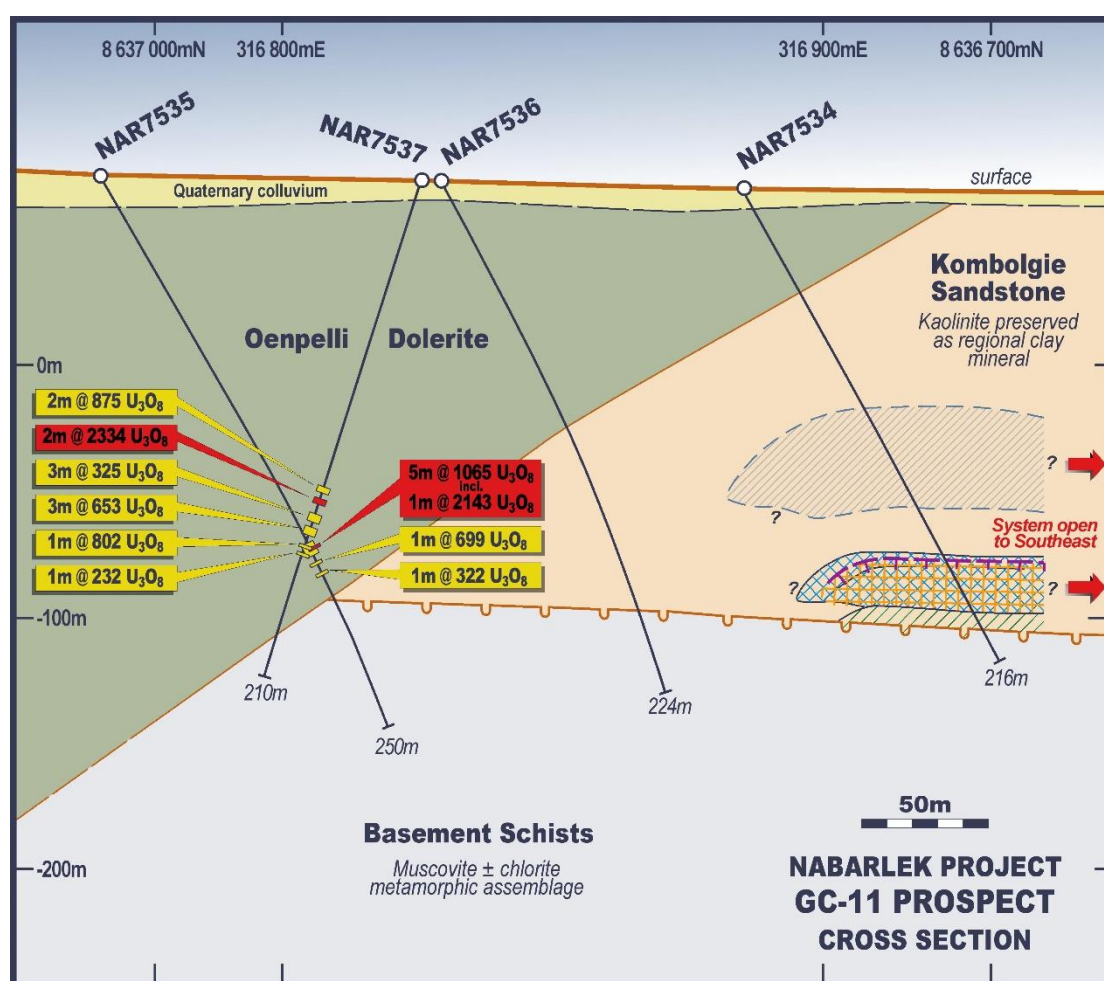


Figure 6: Target GC\_11 Cross-section. Legend to alteration zonation in Figure 7

In summary, the dolerite hosted mineralisation is associated with strong sudoitic chlorite alteration, hosted both in dolerite and extending into the underlying basement. While some hematite alteration was observed in the logging, no V enrichment was observed, suggesting the alteration is less intense than that developed in the core of the N147 system. Similarly, no phengitic sericite was observed in the dolerite (but is observed in the basement in NAR7535), where phengite is associated with the high grade intersection s in N147.

The data suggests that the current intersections may be marginal to a higher grade system, and step out drilling, in both directions, is warranted.



### Target GC 11- Hangingwall unconformity alteration system

Geological and ASD logging of the sandstone in NAR7534 (the westernmost hole on the GC\_11 line) has identified a series of alteration zones typical of the hangingwall alteration halo developed above an unconformity style uranium deposit. The alteration halo zones are shown in Figure 6, and the unconformity uranium model is shown in Figure 7. In addition to the mapped zones shown in Figure 6, intense silicification was identified, with drill penetration rates dropping to around 15 metres per shift in between or associated with the illitic clay alteration halo and the redox front.

Typical sandstone intersections are dominated by kaolinite, for example the recently drilled NAR7532 at GC\_26, and holes south east of N147, and holes NAD6014 and NAD6015, located 530m ESE and 730m SE of NAR7534 respectively. The alteration reported in NAR7534 is highly significant, and is open to the south and south east of the drill hole. Follow up drilling, in a pattern around the drill hole, is highly recommended.

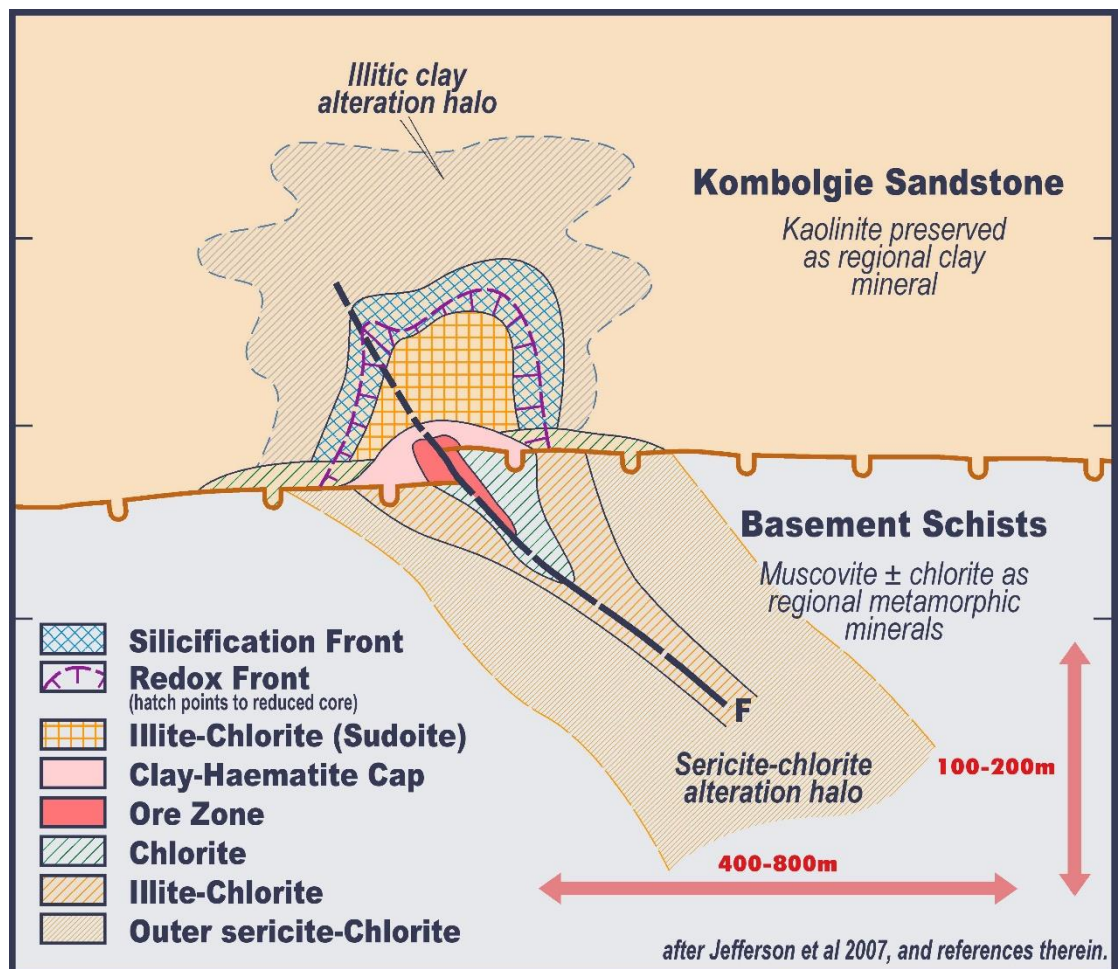


Figure 7: Unconformity uranium style alteration model





## 6. CONCLUSIONS AND RECOMMENDATIONS

Exploration in the 2014- 2105 anniversary year comprised:

1. Target generation based on SWIR and multielement geochemical signatures, based on a research study into the short wavelength infrared (SWIR) spectra and lithogeochemical signature of the Nabarlek orebody; and
2. Drilling testing two targets identified in the above study, namely
  - a. GC\_26, being the immediate extensions of N147; and
  - b. GC\_11, some 1500m west of N147.

The alteration study examined historical data (SWIR, multi-element geochemistry and Pb isotope data) and collected new spectral data on selected historical drill samples (RC chips and core) including holes recently drilled by UEQ on the Nabarlek Project. Initially anomalous areas were identified, typically as:

- Geological anomalies- in this case, late offsets in the base of Kombolgie;
- Geochemical anomalies, either U bearing, Mo anomalous, V anomalous (including normalising for host rock background V, or Li anomalous, representing increased chlorite alteration); and
- SWIR spectral anomalies, initially either phengitic sericite bearing, which appears either coincident with, or very proximal to, U mineralisation; and intense acid alteration.

Individual anomalies were then grouped into Targets, either as individual anomalies, or where several overlapped, as a combined system. 12 Priority Targets were identified, with targets G\_1, GC\_11, GC\_26 and GC\_59 considered to be high priority targets.

Drilling at GC-11 intersected significant U mineralisation including 2m @ 2,354ppm U<sub>3</sub>O<sub>8</sub> from 135m downhole in drillhole NAR7537, and 5m @ 1,065ppm U<sub>3</sub>O<sub>8</sub> from 169m downhole in drillhole NAR7535. The mineralisation is hosted in dolerite, similar to the N147 system, but the associated alteration is less intense than that at N147. Step-out drilling in both directions along the dolerite is highly recommended.

Alteration zones typical of the hangingwall alteration halo developed above an unconformity style uranium deposit were identified in NAR7534, the westernmost hole on the GC\_11 line. Given the typical background clay assemblage in the Kombolgie sandstone is dominated by kaolinite, the illite, silica, and illite- chlorite alteration and associated redox front is highly significant, and is open in several directions. Step- out drilling is highly recommended, with a pattern around NAR7534 suggested.

The alteration pattern identified in NAR7534 is highly significant. While the alteration targeting review identified sericite and chlorite chemical changes (the presence or absence of short wave length chlorite and sericite) as significant, the location and alteration zonation are also significant, and it is recommended the SWIR database and interpretation be extended by:

1. Gathering more SWIR data from holes for which we have drill chips or core, but for which no data was collected originally;
2. Re- interpret the results on a hole by hole basis, looking at patterns in the sandstone quite differently to patterns in the basement; and
3. Looking to filter out metamorphic chlorite and muscovite signatures from the later uranium related alteration.

At Target GC\_26/ N147, while a moderate chlorite alteration zone is developed in dolerite, and strong acid sericite alteration in the basement, the chlorite alteration would appear to be marginal to a U mineralisation system. This would appear to close off the immediate south western extensions of the N147 mineralisation.



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Appendix I  
RC Drilling Data Files