

# **GLASSHOUSE PROJECT**

**GEORGINA BASIN, NORTHERN TERRITORY**

**COMBINED ANNUAL TECHNICAL REPORT FOR EXPLORATION LICENCES:**

**ELs 26308, 26309, 26310, 26311, 26312, 26314, 26701 AND 26702**

**For Year ending 7<sup>th</sup> April 2013**

**Group Reporting Number: GR123/09**

**March 2013**

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## ABSTRACT

<b>Project Name:</b>	Glasshouse Project
<b>Tenement Number:</b>	ELs 26308, 26309, 26310, 26311, 26312, 26314, 26701 AND 26702
<b>Tenement Operator:</b>	Australis Exploration Limited
<b>Tenement Holder:</b>	Australis Exploration Limited
<b>Report Type:</b>	Annual
<b>Report Title:</b>	Glasshouse Project Annual Report 8 <sup>th</sup> April 2011 - 7 <sup>th</sup> April 2013
<b>Report Period</b>	8 <sup>th</sup> April 2011 - 7 <sup>th</sup> April 2013
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<b>Date of Report:</b>	March 2013
<b>1: 250 000 map sheet:</b>	Brunette Downs SE5311, Alroy SE5315, Mt Drummond SE5312, Ranken SE5316
<b>1: 100 000 map sheet:</b>	Paradise Bore 6161, Boxer 6261, Mittiebah 6260, Boree 6160, Alroy 6159, Alexandria 6259, Lulu 6359, Gallipoli 6459, Wonorah 6158, Ranken 6258
<b>Target Commodity:</b>	Phosphate, Uranium, Base Metals
<b>Keywords:</b>	Evaluation of data, Prospectivity assessment and valuation
<b>Prospects Drilled:</b>	-
<b>List of Assays:</b>	-

### ABSTRACT:

<b>Location:</b>	The Glasshouse Project is located in the Barkly Tableland region within the Tennant Creek Mineral Field of the Northern Territory.
<b>Geology:</b>	The project is located within the Georgina Basin which is prospective for uranium and phosphate rock mineralisation within Middle Cambrian shallow marine sediments.
<b>Work done:</b>	Geophysical data review and evaluation, field reconnaissance, Soil sampling, Auger drilling
<b>Conclusion:</b>	

## SUMMARY

This report details exploration and project activities completed during 2012-2013 on Exploration Licenses ELs 26308, 26309, 26310, 26311, 26312, 26314, 26701 and 26702.

The Glasshouse Project is located in the Barkly Tableland region within the Tennant Creek Mineral Field of the Northern Territory.

In 2008 Australis was a wholly owned subsidiary of Mineral Securities Ltd (Minsec) which in turn was owned by CopperCo Ltd (CopperCo). CopperCo fell into receivership in November 2008; its assets were finally sold to Cape Lambert Iron Ore (now Cape Lambert Resources Limited) in June 2009. Australis Exploration is now a wholly owned subsidiary of Cape Lambert Resources Limited (Cape Lambert).

The project was initially comprised of 10 Northern Territory exploration licenses covering an area of some 12,894km<sup>2</sup> and 15 application exploration licenses in Queensland covering an area of 7,690km<sup>2</sup>. The project is located within the Georgina Basin which is prospective for uranium and phosphate rock mineralisation within Middle Cambrian shallow marine sediments. These sediments are almost entirely covered by black cotton soils and sandy alluvium which obscures prospective Middle Cambrian beds. Remote sensing techniques are therefore required to initially target areas for ground follow-up.

During the 2012-2013 reporting period Australis has conducted the following activities:

- Desktop review and geophysical interpretation.
- Target assessment and formulation of exploration program.
- Completion of field reconnaissance including collection of 36 soil samples.
- Follow up soil sampling and auger program: 98 soil and 8 auger samples collected over an area of 19 km<sup>2</sup>
- Geological data collection and interpretation.

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## 1.0 INTRODUCTION

The Glasshouse Project is a package of tenements that Australis Exploration Limited (Australis) holds in Queensland and the Northern Territory. Australis was a wholly owned subsidiary of Mineral Securities Operations Limited (Minsec) A. C. N. 077 507 521, which merged with CopperCo Limited ("CUO") in 2008. CUO subsequently entered administration and receivership in November 2008. Cape Lambert Resources purchased the project in June 2009. The tenure is given in Table 1 with the entire project shown in Figure 3.

The tenure is located in the Barkly Tableland region within the Tennant Creek Mineral Field of the Northern Territory. The tenure was acquired for its potential to host phosphate mineralisation.

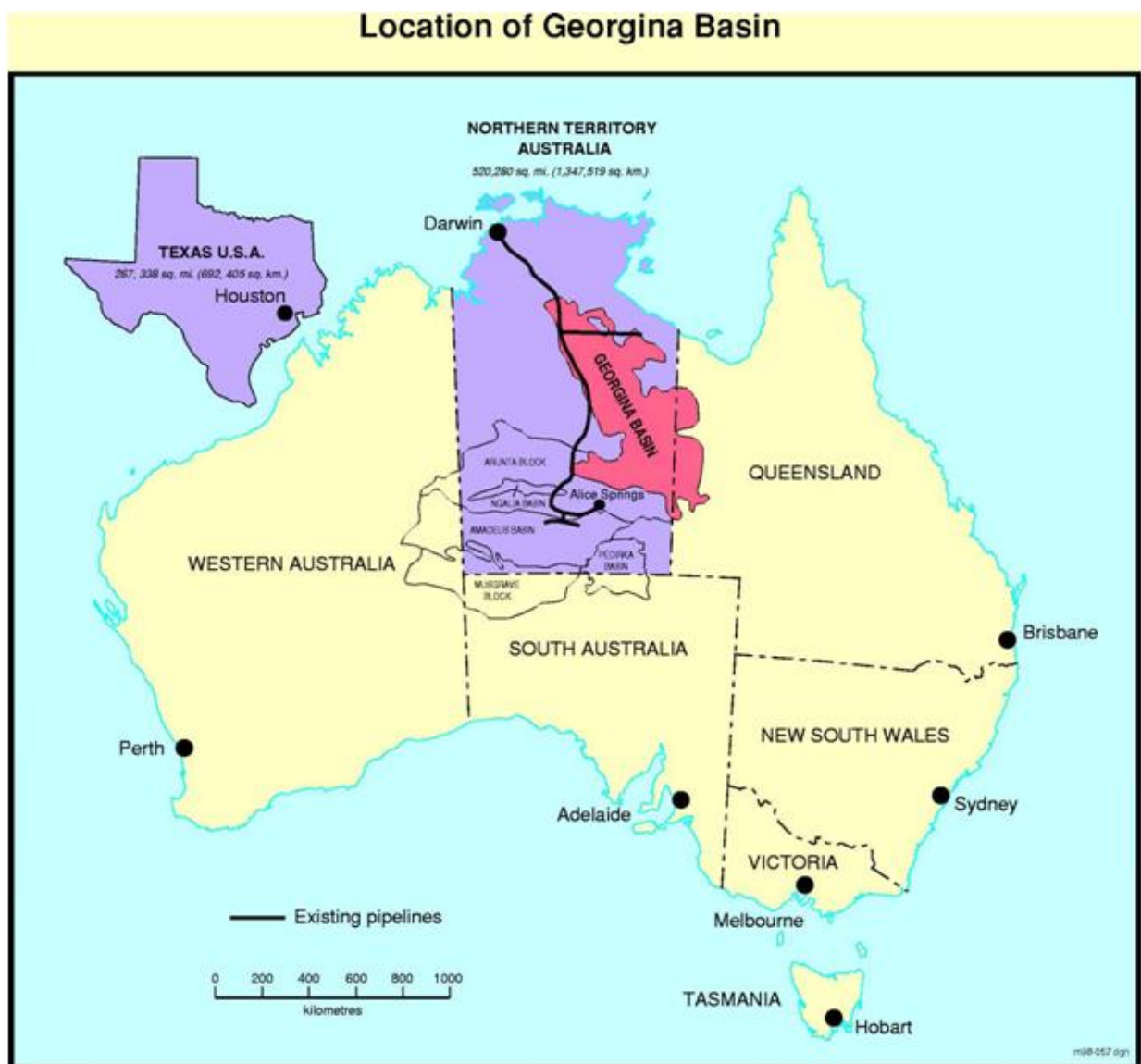


Figure 1: Location of the Georgina Basin

## 1.1 TENURE

The tenure is located on freehold land in the Barkley tablelands in the Northern Territory. The tenements can be accessed by the bitumen Barkley Highway from Camooweal (in Queensland) or Tennant Creek (in Northern Territory), which crosses the tenement group. Within the tenements, there is a network of unsealed roads and station tracks. Some of the tracks traverse black soil plains that can be impassable in wet weather. The tenements are located in the Barkley Tableland region that has low topographic relief. They cover the headwaters and a section of the watershed of the southwards flowing Georgina River. With the low relief and seasonal high rainfall, the drainages form broad braided channels that flow in a general southwards direction. Locally, the southern part of this region is referred as 'channel country'.

Vegetation in the Tableland region is dominated by open savannah woodland and grassland (Figure 2). Taller and more abundant trees are restricted to the banks of the major drainage systems which only flow for short periods after storms.



Figure 2: Photographs of the Barkly Tableland terrain and vegetation in the northern tenement group.

## 1.2 TENEMENTS

A total of 15 exploration licenses covering 21,010 km<sup>2</sup> were granted to Australis Exploration Pty Ltd (Australis) in the Northern Territory. Australis was a wholly owned subsidiary of Mineral Securities Operations Limited (Minsec), which merged with Copper Co Limited (CUO) in 2008. CUO subsequently entered administration and receivership. Subsequently 7 of these exploration licenses have been surrendered. ELs 26302, 26303, 26305, 26307 and 26703 were surrendered in August 2010 and EL26304 and EL17777 were abandoned in 2012. The Glasshouse project now encompasses a total of 8 exploration licenses covering 3117.41 km<sup>2</sup>.

Table 1: Tenure Schedule.

Tenure ID	Holder	Tenement Name	Date Granted	Date Expires	Area Km2	Area Sub-blocks
EL26308	Australis Exploration Limited	Glasshouse 6	8/4/2008	7/4/2013	405.40	125
EL26309	Australis Exploration Limited	Glasshouse 7	8/4/2008	7/4/2013	405.41	125
EL26310	Australis Exploration Limited	Glasshouse 8	8/4/2008	7/4/2013	405.09	125
EL26311	Australis Exploration Limited	Glasshouse 9	8/4/2008	7/4/2013	406.84	125
EL26312	Australis Exploration Limited	Glasshouse 10	8/4/2008	7/4/2013	407.28	125
EL26314	Australis Exploration Limited	Glasshouse 10	8/4/2008	7/4/2013	407.83	125
EL26701	Australis Exploration Limited	Glasshouse 12	8/1/2009	7/1/2014	498.72	155
EL26702	Australis Exploration Limited	Glasshouse 14	15/12/2008	14/12/2013	180.84	56

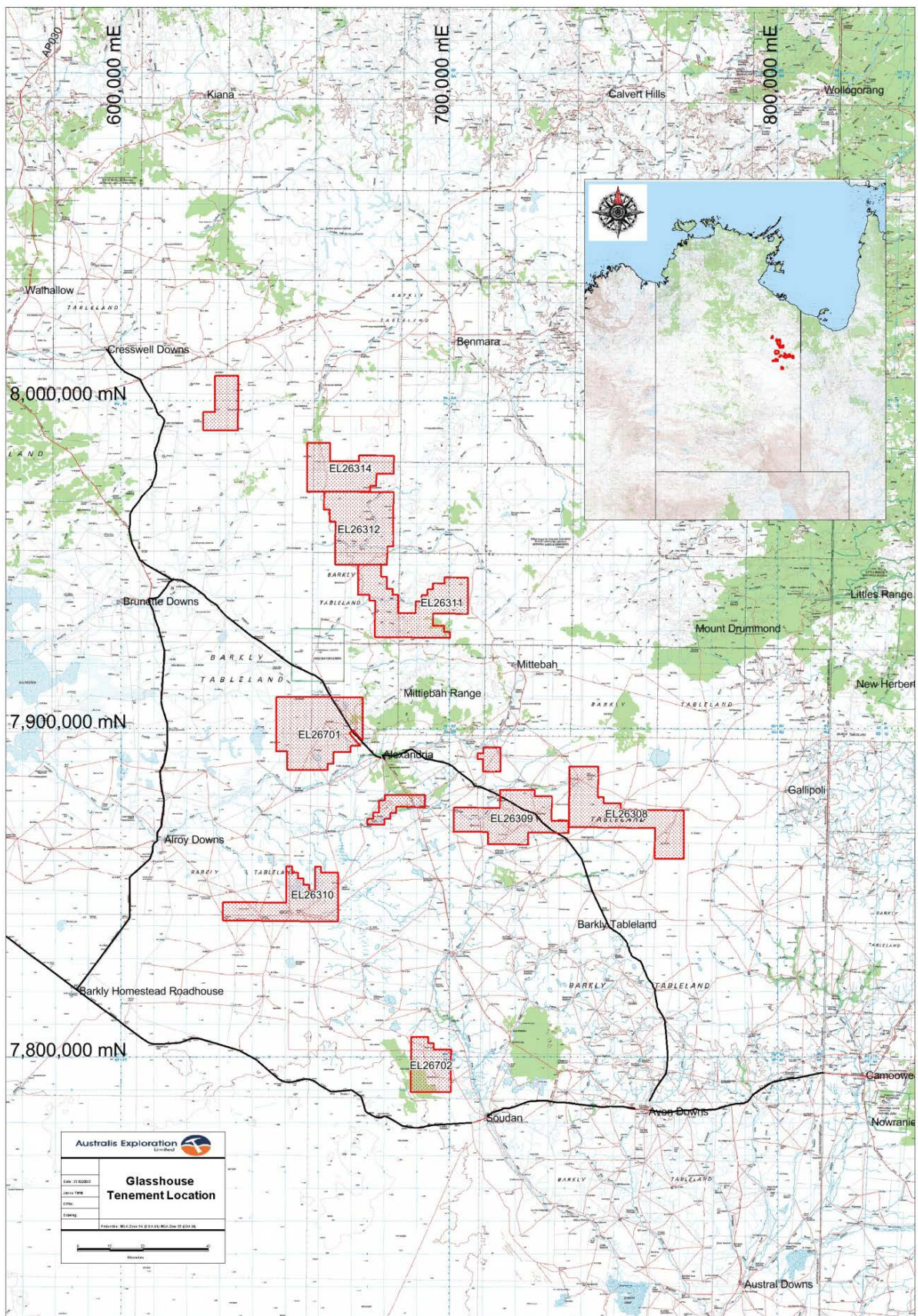


Figure 3: Glasshouse Project Location.

The Glasshouse Project was acquired by Australis in 2007 and 2008 in a series of applications. Initially, applications ELs 26304, 26308, 26309, 26310, 26311, 26312 and 26314 covered a series of north-west trending magnetic linears that parallel the structural trend passing through the McArthur River, Century and Mount Isa base metal deposits. These tenements also covered extensive areas of the Georgina Basin cover sequence sediments prospective for phosphate and uranium. ELs 26701 and 26702 were later applied for over areas marginal to the Alroy, Alexandria and Buchanan Dam phosphate occurrences.

ELs 26308, 26309, 26310, 26311, 26312 and 26314 were granted on the 8<sup>th</sup> April 2008. EL26701 was granted on the 8<sup>th</sup> January 2009 and EL26702 on the 15<sup>th</sup> December 2008. All 8 tenements were granted for a term of 5 years.

The Department of Primary Industry, Fisheries and Mines have approved the 8 Exploration Licenses into one reporting group.

## 2.0 EXPLORATION RATIONALE

Based on initial review of the recently released geological and geophysical data, Australis applied for 57 exploration licenses covering some 41,742 km<sup>2</sup> to the west and south of Mount Isa, and extending to the north-west into the Northern Territory. In this area, outcrop is dominated by Paleozoic, Mesozoic and recent sediments of the Georgina Basin and Eromanga Basin. The geophysical data suggests that there are parts of the tenement area where the prospective Proterozoic-age basement extends beneath the region at relatively shallow depths. Historically, this region has received little attention for mineral exploration due to the Mesozoic and Paleozoic cover. However, the new compilation of geophysical data for the region provides a useful guide to focus exploration on targets with the potential to host large-scale base metal and uranium ore-deposits. In addition, the geophysical and historical database compilation has highlighted opportunities to explore for uranium and phosphate deposits in the younger overlying sediments.

In summary, the Australis tenements cover an area with extensive aeromagnetic, radiometric and gravity anomalies, where historical company reports and current exploration activities by other companies indicate potential for:

- Copper
- Zinc-Lead-Silver
- Uranium
- Phosphate

Proterozoic-age rocks of the Mount Isa Block in north western Queensland host one of the major Copper-Zinc-Lead-Silver and Uranium provinces of the world, including:

- Mt Isa Cu and Pb-Zn-Ag and George Fisher Pb-Zn-Ag mines
- Century Zn-Pb mine
- Ernest Henry Cu-Au mine
- Cannington Ag-Pb mine

- Valhalla and Westmoreland U deposits
- Duchess Phosphate mine

The company's primary focus has been on identifying phosphate mineralisation in Cambrian sedimentary cover sequences. The potential still exists to explore the extensive tenement package for large mineralized systems of copper, lead, zinc and their associated metals (i.e. gold and silver) within the Proterozoic basement rocks beneath the superficial and Phanerozoic units, and the overlying superficial and Phanerozoic sediments for roll-front type and calcrete type uranium mineralisation, phosphate deposits and possible MVT base metals mineralisation.

### 3.0 REGIONAL GEOLOGY

The Georgina Basin, together with the Wiso, Daly, Amadeus and Ngalia basins, form remnants of the stratigraphically continuous Centralian Superbasin that extended over most of central Australia from the Neoproterozoic to Paleozoic. Structural dismemberment of the Superbasin during Paleozoic intra-plate orogenic events (400–300 Ma Alice Springs Orogeny) has resulted in the exposure of Palaeoproterozoic to Mesoproterozoic basement between basin fragments in their current configuration (Khan, Ferenczi, Ahmad and Kruse, 2007), see Figure 4.

The Georgina Basin is the largest of the intracratonic Neoproterozoic to Palaeozoic basins. It covers a large part of eastern Northern Territory and extending into northwest Queensland, for a total area of about 325,000 km<sup>2</sup>, of which 185,000 km<sup>2</sup> lies within the Northern Territory. Down faulted blocks and half-grabens typically contain up to 1.5 km of Neoproterozoic sedimentary rocks. Up to 2.2 km of overlying Palaeozoic succession is preserved in depocentres and synclines. Cambrian platform carbonate rocks dominate the basin fill. Accompanying sandstone and shale were deposited during relative uplift and subsidence, respectively. The Cambrian–Ordovician succession is most complete in the southern portion of the basin. In contrast, the central region contains only a relatively thin Middle Cambrian succession (Khan, Ferenczi, Ahmad and Kruse, 2007).

Basement rocks consist of Mesoproterozoic and minor Neoproterozoic sediments, characterised by shallow marine epicontinental successions of carbonate and marine clastic rocks, evaporite, and fluvial and lacustrine continental sandstone, glaciogenic sediments, shale and siltstone. These sediments were succeeded by marine carbonate and clastic deposits, which accumulated in Cambrian and Ordovician times. Younger, non-marine Silurian to Early Carboniferous successions are restricted in areal extent. In addition, extensive sub-aerial flood basalt (Peaker Piker Volcanics and Antrim Plateau Volcanics) of Early Cambrian age (540 Ma) floor these basins in much of the northern part of the Northern Territory. The volcanics are amygdaloidal and porphyritic tholeiitic basalts and have associated dolerites (McCrow, 2008; Gifford, 2006; Khan, Ferenczi, Ahmad and Kruse, 2007).

The Georgina Basin is bounded by the South Nicholson and McArthur Basins to the north, Tennant Inlier to the west and Arunta Province to the south, and continues eastward into western Queensland to abut the Mt Isa Block. It has been subdivided into several sub-basins that primarily reflect the thickness of Cambrian deposition (Khan, Ferenczi, Ahmad and Kruse, 2007).

In the northern part of the project area, the central Georgina Basin contains a relatively thin stratigraphic succession, up to 450m thick, deposited on a tectonically quiescent platform. Deposition commenced with a marine transgression in the early Middle Cambrian and may have extended into

the Late Cambrian (McCrow, 2008). This central platform has been subdivided into an eastern Undilla Sub-basin and a western Barkly Sub-basin, separated by a NNE – SSW striking structural ridge known as the Alexandria-Wonarah Basement High (McCrow, 2008, Gifford, 2006). In the northern tenements, this structural ridge outcrops as two north-east trending Precambrian basement highs within Georgina Basin sediments, with the Buchanan-Alroy-Alexandria phosphate occurrences occurring nearby. The Mittiebah Range forms the northern Pre-Cambrian inlier, the western end extending into EL26701, while the southern Pre-Cambrian inlier, south of Alexandria homestead and phosphate occurrence, outcrops in the north-east part of EL26310.

By the Middle Cambrian, marine conditions prevailed in the basin and phosphogenesis was widespread (McCrow, 2008). The Middle Cambrian succession has been subdivided into two depositional sequences with three discrete phosphogenic episodes. Sequence 1 (early Middle Cambrian) comprises terrigenous siliclastic rocks, peritidal and shelf carbonate rocks, carbonaceous shale and phosphatic carbonate rocks; sequence 2 (remainder of Middle Cambrian) comprises siliclastic and carbonate rocks, phosphorite and phosphatic limestone, and carbonaceous shale. Major phosphate deposits are apparently in sequence 2, including the Wonarah, Alexandria and Alroy deposits in the Northern Territory. All three appear to be hosted in the Wonarah Formation, although others have assigned the Wonarah deposit to the Gum Ridge Formation (sequence 1) (Khan, Ferenczi, Ahmad and Kruse, 2007). There have been efforts to correlate sedimentary horizons from one area to another but this has been difficult to achieve, other than in the broadest terms, due to rapid lateral facies changes, see Figure 5.

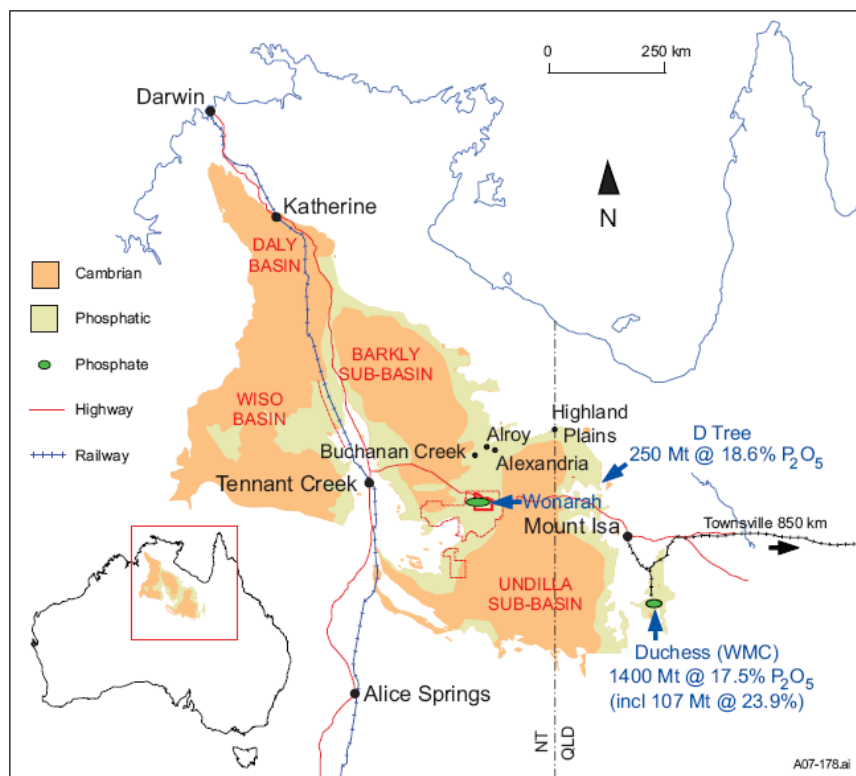


Figure 4 : Simplified geology of the Georgina, Wiso and Daly basins showing the distribution of phosphorite facies depocentres and major phosphate deposits. Source: Khan, M, Ferenczi, PA, Ahmad, M and Kruse, PD (2007).

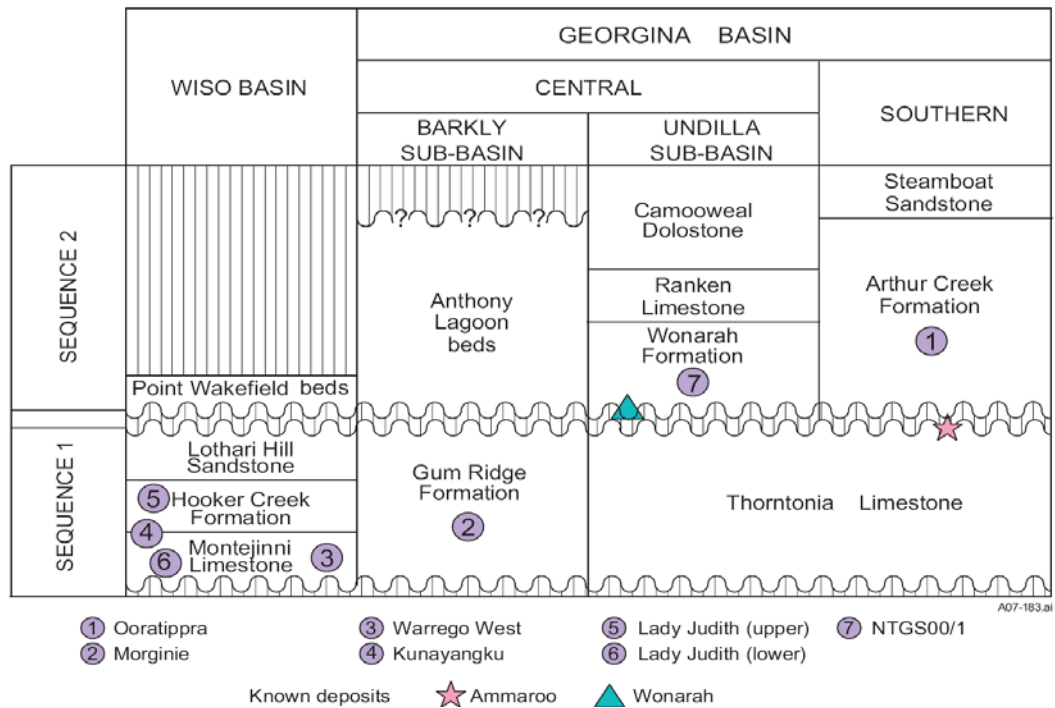


Figure 5 Stratigraphy of the Georgina and Wiso basins in the Northern Territory, showing the stratigraphic location of phosphate occurrences in Lower to Middle Cambrian sediments (Source: Khan, M, Ferenczi, PA, Ahmad, M and Kruse, PD (2007)).

### **3.1 REGIONAL PHOSPHATE PROSPECTIVITY**

Australia's largest phosphate deposits (phosphorites) are the shallow marine siliclastic and carbonate sediments of the Lower to Middle Cambrian Georgina Basin sequence in north-west Queensland and Northern Territory. These sedimentary phosphorite deposits occur where the phosphorus has been chemically and biologically precipitated as apatite group minerals (McCrow, 2008). An up-welling process of phosphogenesis of cold phosphate enriched water onto warm shallow marine shelves and embayments is the mechanism favouring precipitation.

Exploration and phosphate resource development has largely focused on the well-endowed Georgina Basin, which contains significant deposits in the Northern Territory (Wonarah, Highland Plains, Alexandria, Alroy and Buchanan Dam) and Queensland (Duchess, Lady Annie, D Tree, Lady Jane, Galah, Sherrin Creek and others) (McCrow, 2008). Previous studies have also outlined the presence of phosphorite in the Wiso and Daly basins (Khan, Ferenczi and Ahmad, 2005a).

Economic phosphate deposits in Middle Cambrian Georgina Basin sediments are being mined at Duchess (Phosphate Hill) in Queensland (Figure 4). These phosphatic sediments were deposited in a restricted embayment that was bounded by land on its northern, western, and southern sides, and whose eastern connection with the Burke River Outlier, an appendage of the Georgina Basin, was restricted by shallow banks (McCrow, 2008). Incitec's (ex WMC) Phosphate Hill, Duchess Mine and DAP plant produces 648,000 t of di-ammonium phosphate and 236,000t of mono-ammonium phosphate (from 2 Mt of phosphate rock) annually from a deposit containing a total resource of 131 Mt @ 23.5% P<sub>2</sub>O<sub>5</sub> (McCrow, 2008; Ferenczi, Khan and Ahmad, 2005b). That facility commenced production in December 1999 (Gifford, 2006).

The host rocks for these deposits are typically recessive and often covered with surficial sediments. Previous exploration and discovery of known deposits involved shallow reconnaissance drilling programs (and phosphate testing of drill cuttings) in favourable stratigraphy in close proximity to palaeo-highs (Ferenczi, Khan and Ahmad, 2005b). Future targeting of phosphorite deposits would involve a structural interpretation which would include identifying possible embayments and structural palaeo-highs (McCrow, 2008).

Howard (1990) examined the distribution of phosphatic facies in the Georgina, Wiso and Daly River Basins. He used lithological logs and analyses of cuttings from water bores and Bureau of Mineral Resources stratigraphic holes, together with aeromagnetic, gravity and elevation data, to define a carbonate-siltstone-chert phosphatic lithofacies of Middle Cambrian age within the basins. The deposition of these phosphatic lithofacies is related to the basement configuration and its depth. They occur as belts, peripheral to and within the basins, with an average width of 32 km, a thickness of 10 to 190 metres, and have been traced over a distance of 2,100 km. Some phosphorite deposits (such as the Lady Judith in the Wiso Basin) rest on volcanic rocks and interdigitate with carbonates of the Montejinni Limestone, while others, such as the Ammaroo phosphatic belt in the southwestern portion of the Georgina Basin, are contained within a depression bounded by limestones of the Arthur Creek Formation. The phosphatic sediments are believed to have been deposited primarily as an Ordian Middle Cambrian event in the west with a 'younging' transition through Ordian and/or Early Templetonian to Late Templetonian in the southeast. The basins are extensional, exhibiting a series of broad downwarps crossed by peripheral aulacogens, grabens, half grabens formed in the Late Proterozoic and modified subsequently by the development of plateau, narrow horst blocks and adjacent deeps during the Middle Cambrian along basin-dividing arches. The basement to the

shallow-water phosphatic lithofacies consists of Proterozoic sediment or Early Cambrian volcanic plateau or peripheral sloping platforms which in the Brunette Sub-basin have present elevations of 0-300 metres ASL (Howard, 1990).

### **3.2 LOCAL GEOLOGY**

#### **Alexandria-Alroy-Buchanan Dam Geology**

In the Alexandria Region, the early Middle Cambrian sediments include the Wonarah Beds, Burton Beds and Anthony Lagoon Beds. They all consist predominantly of siltstone, sandstone, chert, limestone and dolomite. IMC reported that sequences of Middle Cambrian siltstone/sandstone deposition in close proximity to mapped Precambrian basement highs almost invariably overlie Peaker Piker volcanics of Lower Middle Cambrian age (northern Alexandria) or Precambrian Mittiebah Sandstone/ Mullera Formation (most of Alexandria) (McCrow, 2008).

In 1976 ICI reported no Pre-Cainozoic outcrops in the Alroy area which is totally covered by pedo-calcic black/grey soils, with alluvium in the seasonal swamps associated with the Playford and Buchanan Rivers. The under lying rocks were siltstone, shale, chert, limestone and dolomite. These are probably the Lower Middle Cambrian Burton Beds, considered to be the stratigraphic equivalent of the Wonarah Beds to the south and the Beetle Creek Formation in Queensland, both of which are phosphatic in parts. No information is available about rocks below the Middle Cambrian (McCrow, 2008).

#### **Wonarah Deposit Geology**

The Wonarah deposits occur along the flanks of the Alexandria – Wonarah High. On lapping dolomitic members equivalent to the Middle Cambrian Thornton Limestone are present on the lower flanks of this structural ridge and, when present, the phosphorus-bearing sediments (Upper Gum Ridge Formation) occur on the limestone and extend in thicker beds, lying directly on the Peaker Piker Volcanics, on the upper flanks of the ridge. This succession is then overlain by the Convolute Mudstone followed by the Hanging Wall Mudstone. Two basal sedimentary units that are not always present are the Transitional Sediments and the Potassium Marker Horizon. The transitional sediments consist of mixed mudstone, siltstone, sandstone, and a possible palaeo soil. The overlying Potassium Marker Horizon is a clay rich mudstone (Gifford, 2006).

There are two mineralised rock types at Wonarah – Mudstone Phosphorite and the Chert Breccia Phosphorite (Gifford, 2006). The Mudstone Phosphorite contains most of the mineralisation, forming friable and fine grained beds 2 metres to 10 metres thick with grades up to 40% P<sub>2</sub>O<sub>5</sub> but typically between 20% and 30% P<sub>2</sub>O<sub>5</sub>. The Chert Breccia Phosphorite occurs beneath the Mudstone Phosphorite with a gradational boundary and contains discrete clasts of chert breccia in a phosphorite matrix. The grade ranges from 5% to 20% P<sub>2</sub>O<sub>5</sub> but is typically between 10% and 15% P<sub>2</sub>O<sub>5</sub> (Gifford, 2006).

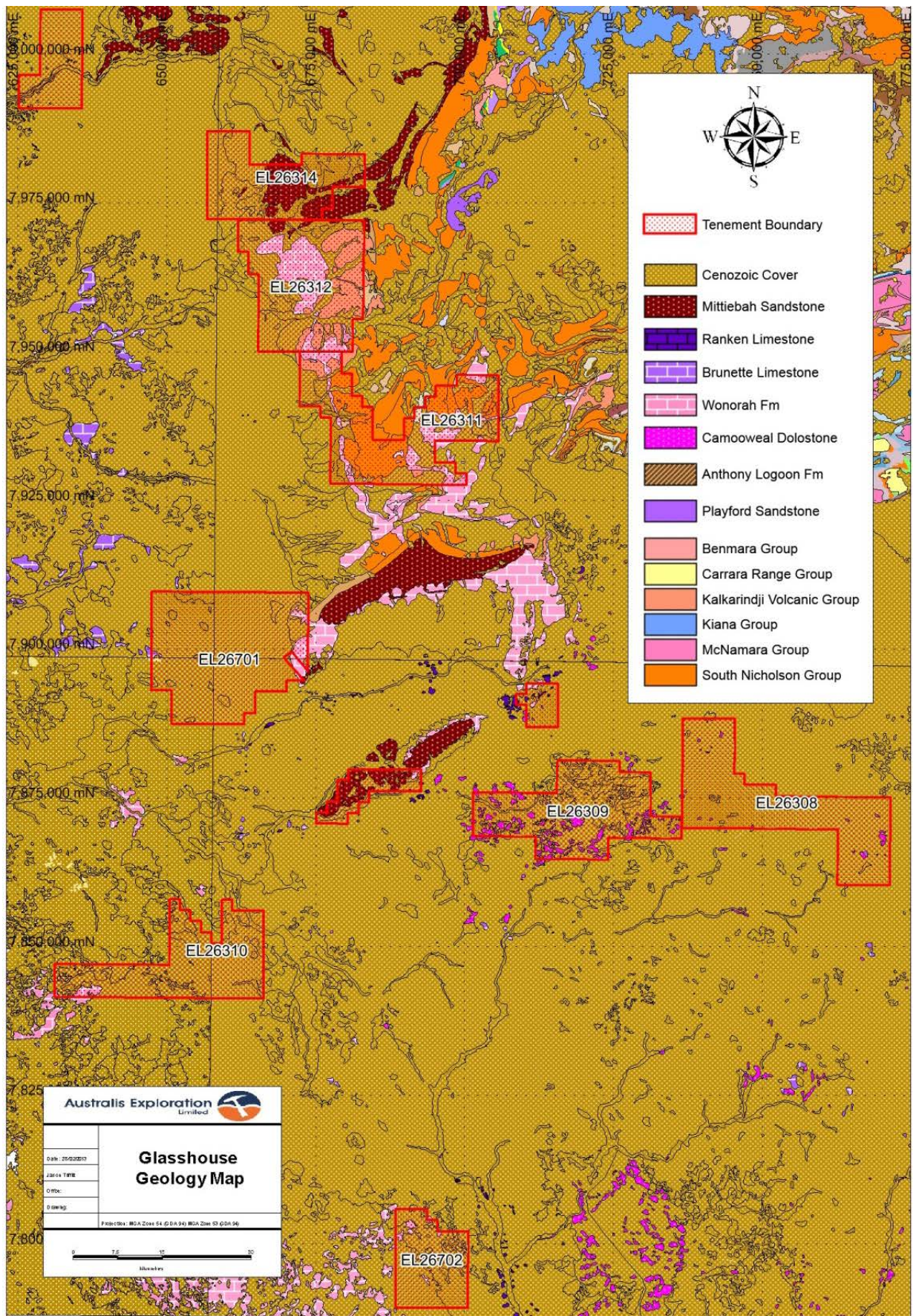


Figure 6 Project Geology

## 4.0 HISTORICAL PHOSPHATE EXPLORATION

The Glasshouse Project area has been explored by numerous previous workers. The details of this and the work that was completed are presented in Table 2.

**Table 2: Previous Exploration on Glasshouse Tenements.**

Year	Company	Findings
1968-1971	IMC Development	IMC Development completed an extensive phosphate exploration program covering the majority of the project area. Work completed included air photo interpretation, geological mapping, and interpretation of radiometric and magnetic geophysics surveys. They completed an extensive drilling program which led to the discovery of the Wonarah and Alexandria phosphate deposits (outside of project area to the south). They note that phosphate mineralisation occurs within clastic sediments on the margins of Precambrian basement highs and these sediments (the Wonarah Beds, Burton Beds and Anthony Lagoon Beds) are likely to be Mid-Cambrian correlates of the Beetle Creek-Inca Creek Formations in Queensland that host the D-Tree phosphate deposit. They also note that the most favorable environment appears to be have been in silt-chert facies in the shallows of the Middle Cambrian phosphogenic sea. A total of 12 widely spaced drill holes were completed within the project area (426 metres). Drill cuttings were tested with ammonium molybdate to assess whether phosphate was present and select intervals for assaying. Two holes intercepted narrow widths of phosphatic beds returning 1.5m at 2% P <sub>2</sub> O <sub>5</sub> and 0.8m at 2.2% P <sub>2</sub> O <sub>5</sub> . The tenements were relinquished as they were not thought prospective for phosphate mineralisation and to focus on the neighbouring Wonarah and Alexandria deposits.
1981-1982	BHP Minerals	Pegged tenement in central part of project area targeting Mississippi Valley lead-zinc type deposits. Completed literature review and photo-geological studies and decided to relinquish tenement.
1984-1985	CRA Exploration	Completed diamond exploration program over the eastern two thirds of the project area. Completed a helicopter supported drainage sampling program with several micro-diamonds recovered that were believed to have been recycled from a secondary detrital source. Orientation aeromagnetic surveying was completed, indicating the area was amenable to detailed magnetic for detecting magnetic diatremes.
1985-1986	Australian Diamond Exploration/ Design and Construction	Completed a sampling program over the north-eastern part of the project area. Collected 24 samples, of which five contained microdiamonds. No kimberlite indicator minerals were identified. Thematic mapping was carried out over the area. No targets were identified and the tenement was relinquished.
1983-1989	AOG Mines/Ashton/ Aberfoyle/ Australian Diamond Exploration JV's	Completed extensive diamond exploration programs throughout the project area. Work completed included aeromagnetic and ground magnetic surveys, stream sediment sampling for kimberlite indicator minerals, and bulk sampling of alluvial material by costean sampling and shallow RAB drilling. Several microdiamonds were found in bulk samples, but it was concluded that potential for diamondiferous kimberlite pipes in the area was remote.

Year	Company	Findings
1984-1990	CRA Exploration	Completed an extensive diamond exploration program over the much of the project area. Several micro diamonds were recovered and orientation magnetic surveys were completed. It was noted that detailed aeromagnetics would be useful for detecting magnetic diatremes.
1989-1990	CRA Exploration	Completed an extensive diamond exploration program over the eastern part of the project area. Helicopter and ground magnetic was carried out identifying many magnetic targets, of which 15 were drill tested. One microdiamond was recovered from the sampling program and no further work was completed. The MVT potential of the areas was also reviewed but was not considered prospective for this style of mineralisation due to the lack of indicator minerals in loam samples and the low fluorine levels in groundwater.
1985-1991	Ashton/Design and Construction JV	Completed diamond exploration programs throughout the central part project area. Work completed included thematic mapping and stream and bulk sampling of alluvial material. Several microdiamonds were found in bulk samples, but it was concluded that potential for diamondiferous kimberlite pipes in the area was remote and the tenement was relinquished.
1991-1992	BHP Minerals	Based on aeromagnetic interpretation, a tenement was pegged that covered a small portion of the south east of the project area targeting SEDEX deposits within the interpreted shallow Proterozoic basement. Shallow ground magnetic soundings revealed Proterozoic basement was at depths greater than 300m. The tenement was relinquished.
1993-1997	Aberfoyle/Ashton Mining	Completed diamond exploration programs in the north east of the project area. Work completed included stream sediment sampling and loam sampling. One microdiamond was recovered but no other diamond indicator minerals were identified.
1995-1997	BHP Minerals	Completed reconnaissance geological programs targeting SEDEX style base metal deposits within outcropping and below cover basement Proterozoic rocks. Geophysical and geological interpretations concluded that prospective host rocks of the Proterozoic Fickling Group may lie below cover south of the interpreted extension of the Fish River Fault. Several PROTEM readings were taken indicating that the cover sequence was not conductive and would not present problems for planned airborne EM. An airborne GEOTEM survey was completed, covering part of the northern most part of the project area. A number of low order GEOTEM anomalies were defined, but were not deemed worthy of further follow up and no more work was completed on the tenements.
2002-2004	De Beers Australia	Reconnaissance diamond exploration was carried out over an area that onlaps the southeast part of the project area. 37 Streams sediments were collected and analysed for the presence of diamond indicator minerals. No kimberlite indicator minerals were found and no priority magnetic anomalies were defined and the ground was relinquished.
2003-2004	Anglo American Exploration	Completed an exploration program targeting SEDEX style Pb-Zn mineralisation over a tenement that overlaps the north east part of the project area (the work was targeted Proterozoic rocks outside of the current project area). Work included a review of previous exploration and 40.2 km of TEM surveying (outside of project area). Evaluation of the data and target review downgraded the prospectivity of the lease and it was surrendered.

### Previous Exploration conducted By Australis Exploration:

Field evaluation of the Glasshouse tenements was conducted in October 2011 incorporating XRF soil and rock chip surveying and collection of scintillometer total count data at anomaly sites. The results of this survey can be seen in figure 7. The 2011 program resulted in four anomalous sites which were targeted in a follow up soil sampling program in the current reporting period.

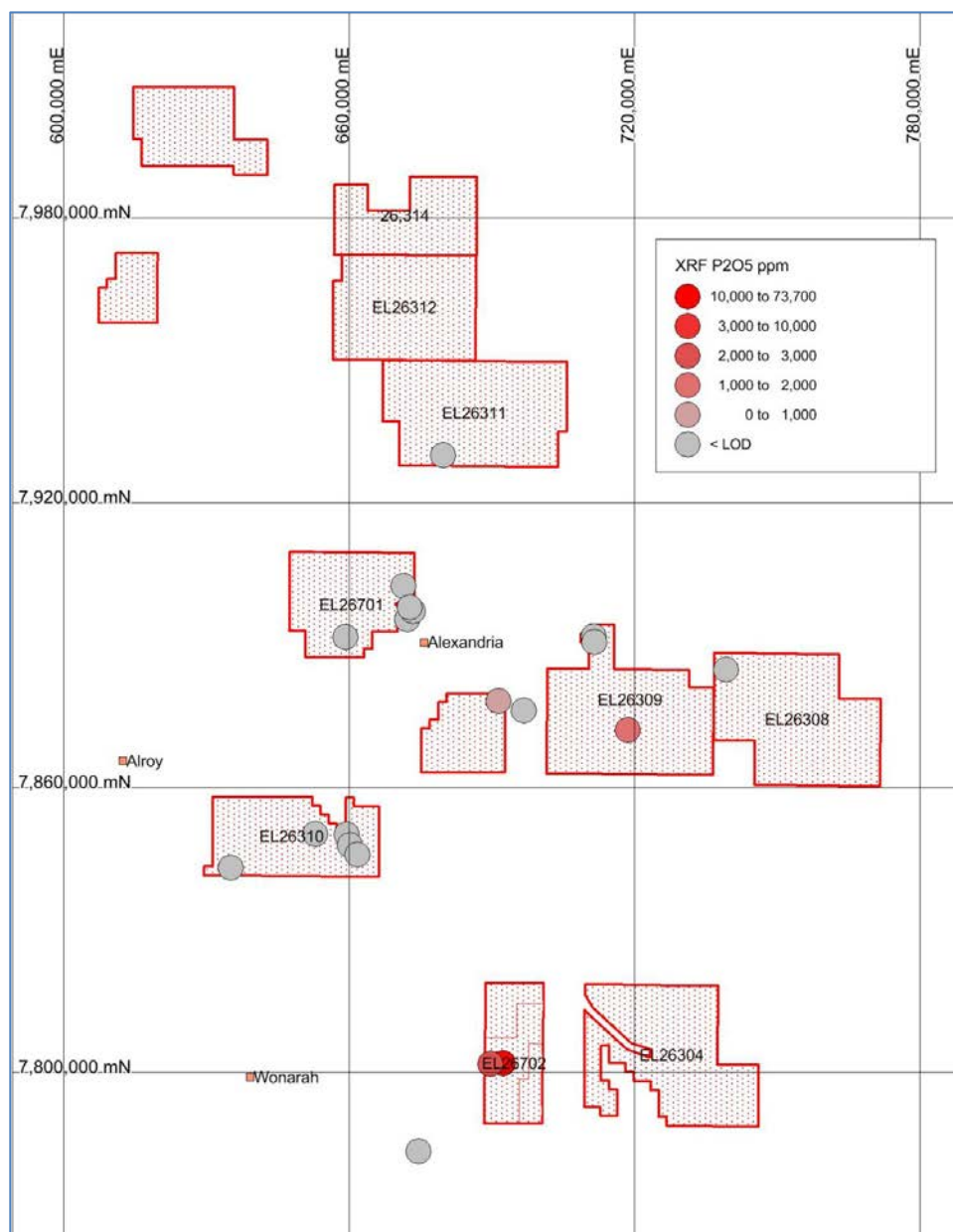


Figure 7: 2011 XRF Surveying Results.

The 2011 reconnaissance of the Glasshouse tenements has shown the Uranium channel anomalism to be a maximum of two to four times background Uranium levels. This Uranium channel anomalism is not significant enough to be an effective exploration tool in this part of the Georgina Basin and as such its weighting as an exploration vector has been downgraded.

## 5.0 EXPLORATION COMPLETED IN 2012 - 2013

During 2012 - 2013 the following exploration activities were undertaken on the tenements:

- XRF Follow Up and soil sampling: 30 samples
- Field Reconnaissance and soil sampling grid: 36 samples
- Follow up soil sampling grid and auger program: 98 soil and 8 auger samples collected over an area of 19 sq. km
- Geological data collection and interpretation.

Each of these activities is described in detail below:

### 5.1 INTERPRETATION

The 2011 XRF reconnaissance program resulted in identifying anomalous phosphate sites which were targeted in a follow up soil sampling program in the current reporting period. This follow up program was conducted in two separate trips in July/August and September 2012. All anomalous sites identified using handheld XRF were soil sampled using an 180µm/-80mesh sieve, 100g samples collected and placed into a calico bag. A basic grid was completed over each site with a single sample on the XRF anomaly location and at least four other samples taken 100m apart at cardinal points (N, E, S, W). All samples were submitted to ALS Laboratories in Mt Isa for analysis using ME-ICP61 and ME-XRF24 which specifically target low level phosphate. The assay results have been included in Appendix 1.

The program has determined that many of these areas have only background levels of phosphate and require no further work. Site A4 within EL 26310 returned anomalous phosphate in several soil samples averaging 0.145% P<sub>2</sub>O<sub>5</sub> (Figure 8).

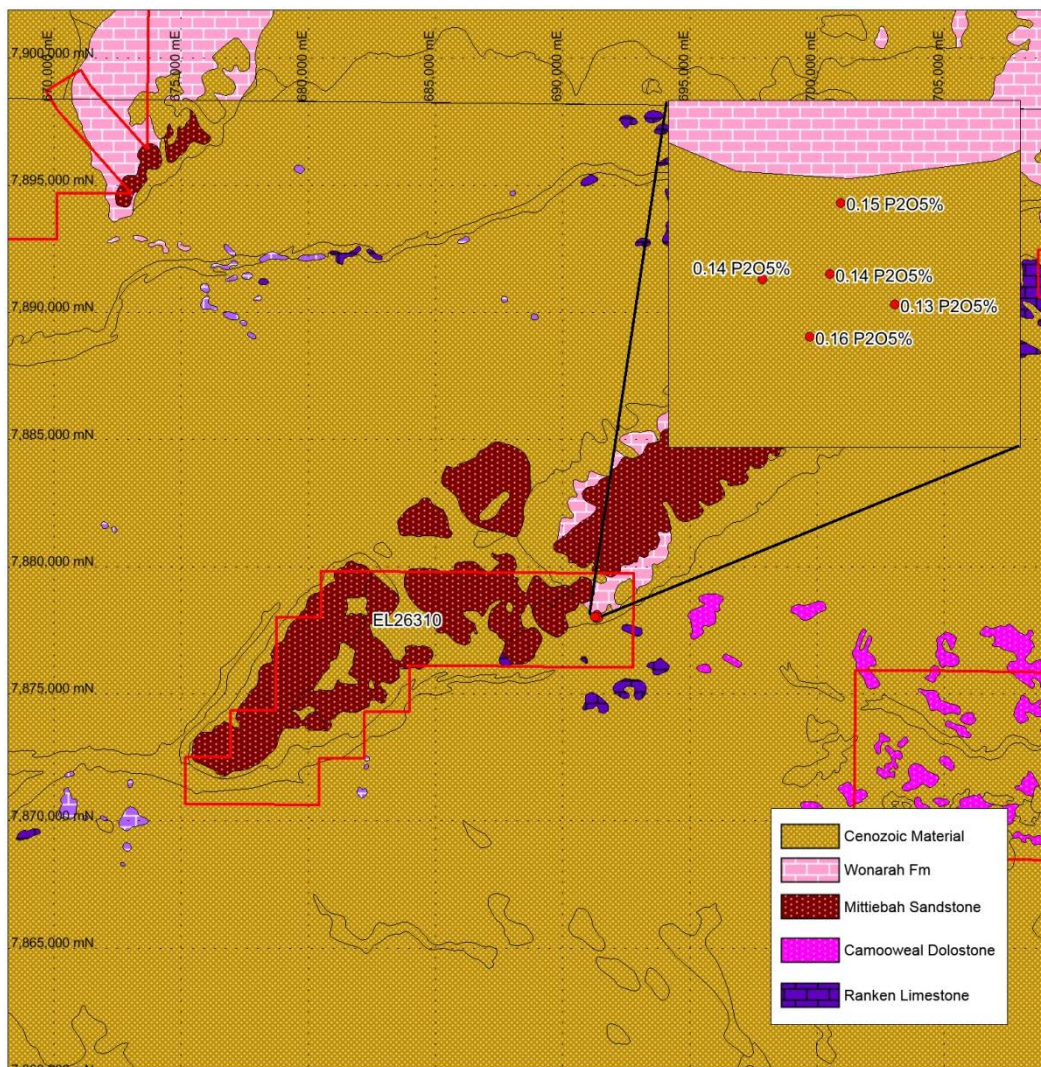


Figure 8: EL26310 XRF Follow Up Soil Sample Results.

Follow up soil sampling of 2011 XRF results has discovered anomalous phosphate in soils on EL 26310, as a result a 36 sample grid was implemented. The grid consisted of collection of 180µm/-80mesh sieved samples on a 400m x 400m grid (Figure 9).

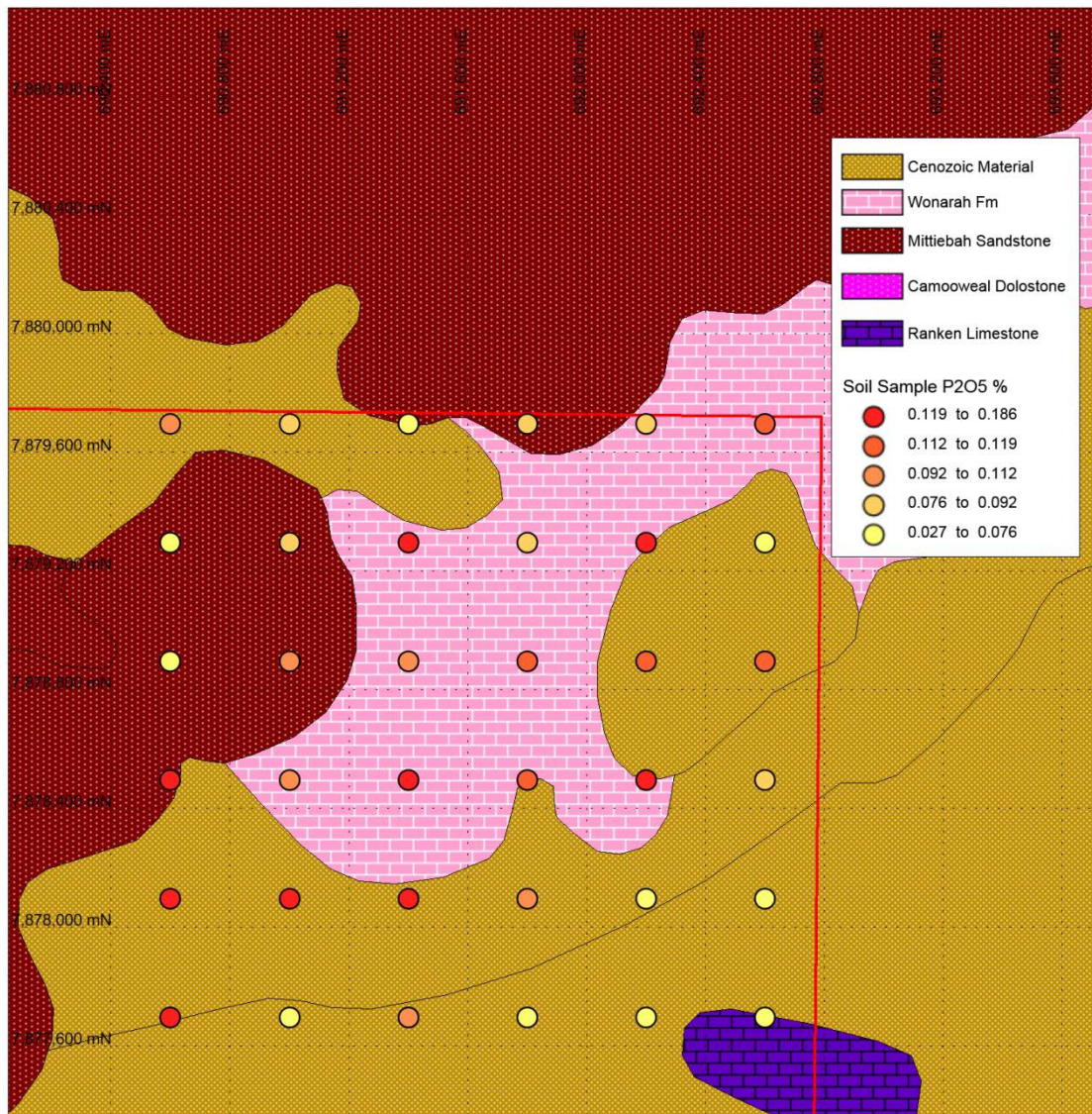


Figure 9: Dessert Creek Project (EL 26310) Soil Sampling Thematic Map.

During October 2012, a secondary program to extend the soil sampling grid conducted on EL 26310 was completed with 98 soil and 8 auger samples collected over an area of 19 km<sup>2</sup>. A basic 400m x 400m grid was used to cover the northern portion of EL 26310, extending the previously defined anomaly and also testing a nearby radiometric anomaly which may be associated with surficial phosphate mineralisation. All soil samples were collected 10-20cm below surface in order to avoid sampling transported and/or contaminated material. Auger samples were collected 30-40cm below surface using a hand held auger. All samples were sieved using an 180µm/-80mesh sieve, >100g sampled and stored in Kraft geochemical sampling bags.

The 98 soil samples assayed averaged 401 ppm P or 0.092% P<sub>2</sub>O<sub>5</sub> while the 8 auger holes averaged 721ppm P or 0.165% P<sub>2</sub>O<sub>5</sub>, 79% more than the soils. It must be noted that when compared to the soil samples directly around the auger holes the soil samples averaged 537ppm P or 0.123% P<sub>2</sub>O<sub>5</sub> which is still 34% less. 56 of the 98 soil samples were >0.1% P<sub>2</sub>O<sub>5</sub> which has been selected as anomalous as it is approximately 3 times background levels (based on field observations). A very rough area calculation for the anomaly within EL26310 is ~11.3 km<sup>2</sup> which is significant in size.

Auger samples collected along the phosphate anomaly show a distinct elevation in phosphate levels when compared to soil samples collected within the same area. This indicates that the phosphate anomalism is not just a surficial anomaly from outside factors such as bush fires and that drilling may be warranted in order to fully test for a potential source. Of the 8 auger samples collected, 7 were highly elevated ( $>0.1\% \text{ P}_2\text{O}_5$ ), compared to background levels.

Results from the secondary soil sampling program within EL26310 have been encouraging with an extension of the previously defined phosphate anomalism along the margins of the Mittiebah Sandstone. Auger sampling has also been successful with elevated phosphate grades obtained from subsurface sampling compared to previous surficial samples. The auger sampling has also helped reduce the likelihood that the anomalism is due to surficial contamination or other unforeseen factors.

The results from the soil and auger program have highlighted the possibility of concealed phosphate mineralisation along the southern margin of the Mittiebah Sandstone Figure 10.

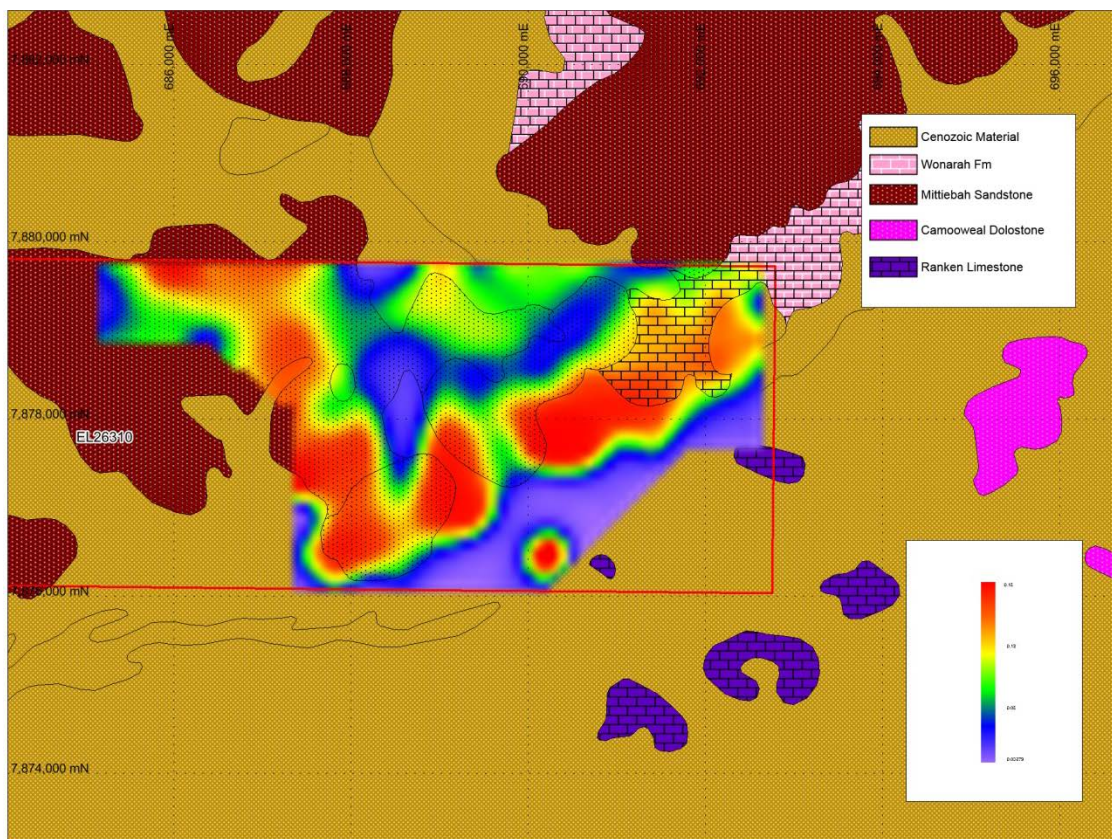


Figure 10: Minimum Curvature Plot of  $\text{P}_2\text{O}_5\%$  for the EL 26310 soil/auger sampling grid.

## 6.0 CONCLUSIONS

Observations of radiometric anomalism on investigated Glasshouse tenements show levels that are not significant enough to be an effective exploration tool in this part of the Georgina Basin and as such it's weighting as an exploration vector has been downgraded. Radeye scintillometer reading put total counts per second radiometric background levels for the Glasshouse area at an average of 10-15cps, while the observed readings at an anomalous area are in the range of 20-25cps resulting in an anomalism of barely double background levels. The expected radiometric response for Cambrian phosphatic sediments of the Georgina basin can be in the order of 100ppm Uranium. This should result in scintillometer readings of well over 100cps with readings of around 200cps being entirely feasible. The lack of signal could be due to the lack of outcrop exposure as 1m of cover could completely attenuate any radiometric signal.

Ongoing exploration will focus on areas proximal to the Georgina Basin margin or inter basinal highs with coincident Wonarah Formation sediments.

Work on the inter-basinal model will continue with a 13 hole RC/RAB program targeting anomalous phosphate in soils discovered on EL26310.

Basin margin style mineralisation model work will be continued with soil sampling / mapping program targeting the inferred Georgina Basin margin in the Mittiebah Project area.

## 7.0 RECOMMENDATION FOR 2013-2014

Work completed in 2012-2013 has resulted in the following recommendations for the project going forward:

- Reconnaissance geological mapping and geochemical sampling in the form of soil survey transects to be conducted on the Mittiebah Project (EL26311, EL26312 and EL 26314), concentrating on Basin margin style targets. Targets are to be areas of the Georgina Basin margin with basin complexity in the form of possible palaeo-embayments that are coincident with prospective Wonorah Formation sediments.
- 13 Hole RC/RAB drilling program to assess Inter-basinal style Phosphate mineralisation discovered in the 2012-2013 field season.
- Further market research into the rock phosphate market and project economics.

### Inter-basinal Targets

Soil sampling completed in mid to late 2012 has identified anomalous phosphate 2-5 times higher than background levels within EL26310. Recent desktop reviews have also identified a target within EL26701 which has similar aeromagnetic characteristics to the nearby Wonorah phosphate deposit. Both of these areas are proposed to be drilled in Q2-Q3 2013 with either RAB or RC with a total of 13 holes proposed. The program will target the peak lows in the aeromagnetics within EL26701 and peak highs in the soil sampling within EL26310 Figure 11.

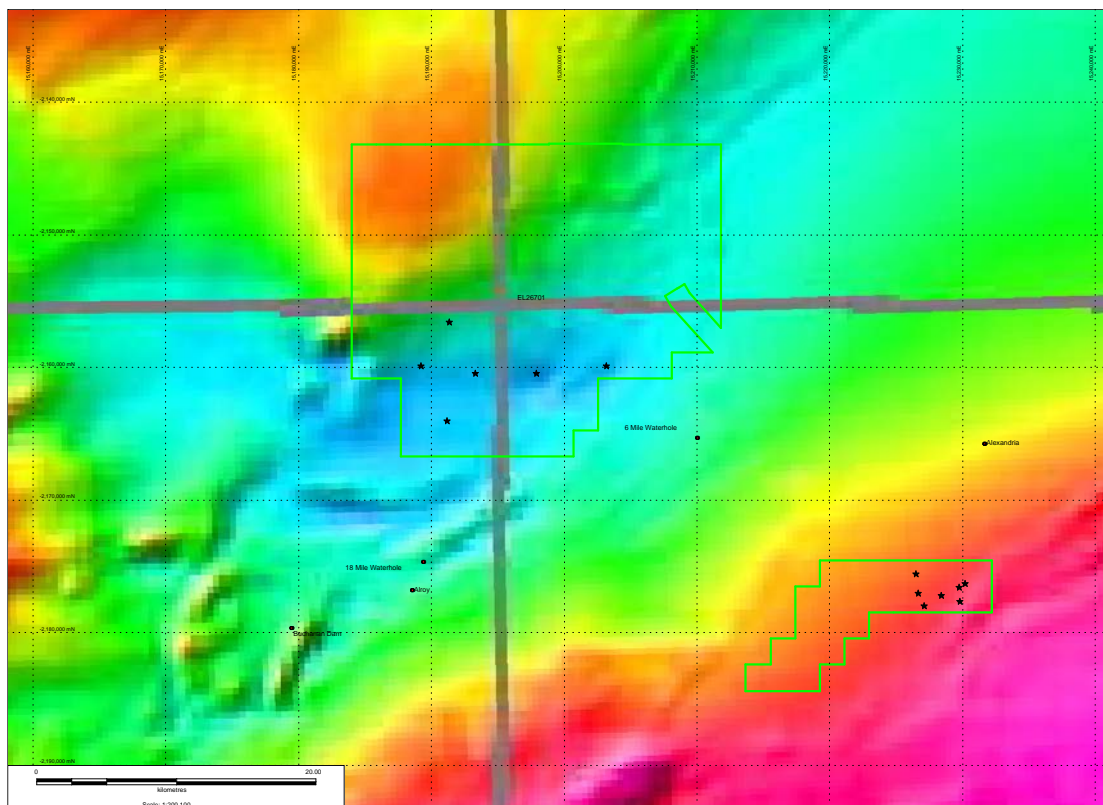


Figure 11: TMI Aeromagnetic Imagery showing proposed drillhole locations.

## Basin Margin Targets

An exploration program consisting of soil sampling and geological mapping targeting the strike of the inferred Georgina Basin margin has been planned for the 2013-2014 reporting period. The objective of the program is to quantify the potential of the Mittiebah Project, EL26314, EL26312 and EL26311 of the Glasshouse area, to host basin margin style phosphate mineralisation. The program will consist of 60 line kilometres of basin margin mapping and soil sampling with access afforded via helicopter. Soil sampling and mapping will be conducted along twelve 5km transects designed to intersect the inferred basin margin targeting areas of the greatest basin complexity that are coincident with Wonarah Formation sediments Figure 12.

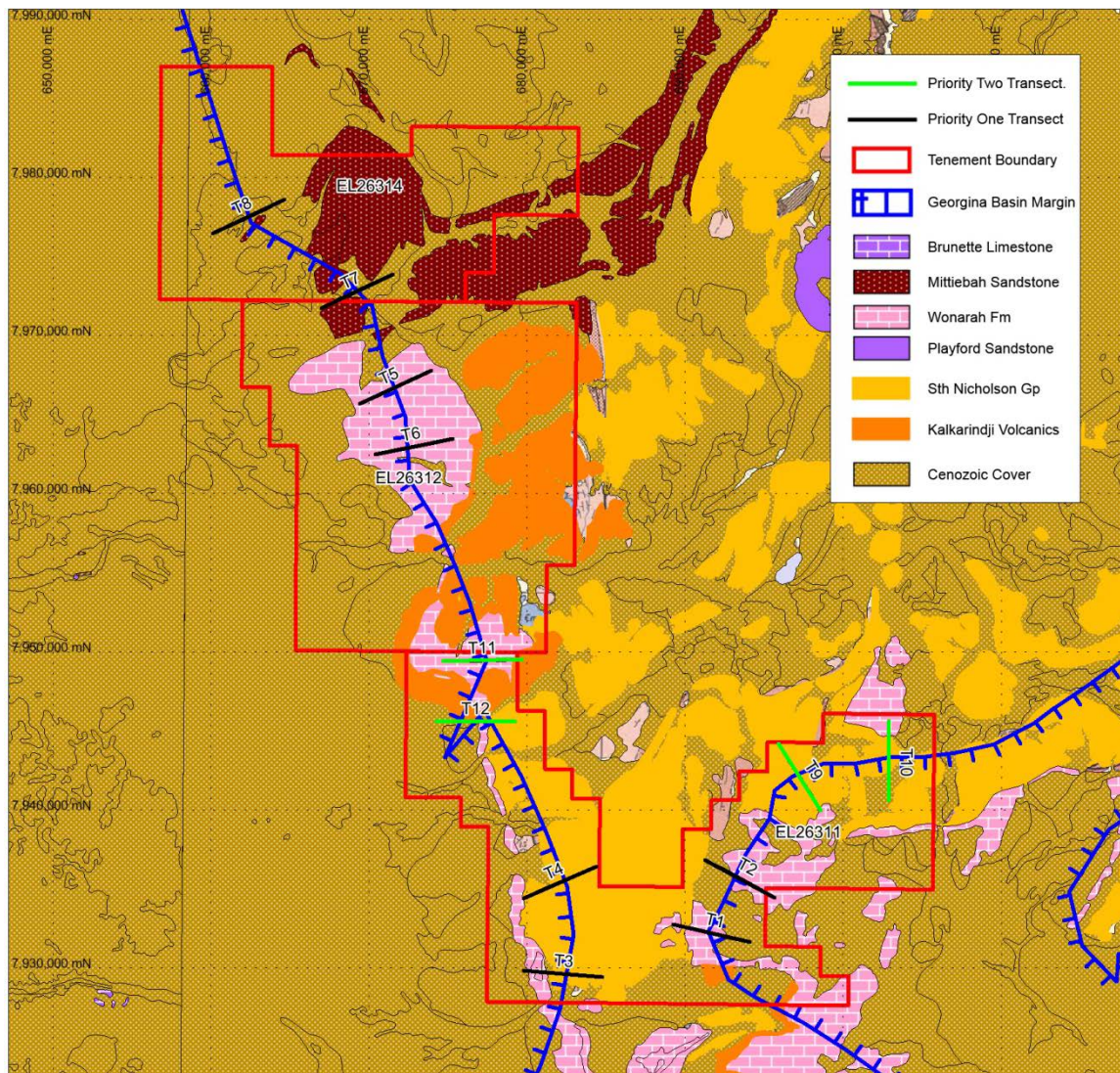


Figure 12: Mittiebah Project Geology Showing Proposed Sampling Transects.

## 8.0 REFERENCES

- |   |       |  |
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## APPENDIX 1

### *EL 26310 SOIL ASSAY RESULTS*