# YEAR 2 ANNUAL GROUP REPORT

## BARKLY PROJECT

20 May 2011 to 19 May 2012

<table>
<thead>
<tr>
<th>Title Holder</th>
<th>NATURAL RESOURCES EXPLORATION PTY. LTD.</th>
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<tr>
<td>Operator</td>
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<tr>
<td>Tenement Manager</td>
<td>Nicole Munro, Natural Resources Exploration Pty. Ltd.</td>
</tr>
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<td>EL(s): 27647, 27653, 27659, 27665, 27666, 27667, 27668, 27669, 27670, 27671, 27672, 27673 &amp; 27819.</td>
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<tr>
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<td></td>
<td>• McNichol</td>
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<td>• Limestone Ridges</td>
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<td>• Little Buchanan</td>
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<td>• Boree</td>
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<td>• Dolostone Rim</td>
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<td>Munro, N</td>
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Summary

Section 94 of the *Mineral Titles Act* requires the submission of an Annual Report prepared by the titleholder for each exploration licence. Natural Resources Exploration’s thirteen (13) Exploration Licences in the Barkly region have been approved for Group Technical Reporting.

This Annual Group Report relates to all thirteen (13) permits and provides a summary of the activities carried out over the permits in the past 12 months, including any results produced by those activities. All thirteen (13) licences will be referred to as ‘the Barkly Project’; unless specific attributes of each individual licence are discussed and then the case will be that the individual project name and number will be identified.

Natural Resources Exploration (‘NRE’) is exploring for phosphate, uranium and diamonds in the Northern Territory’s Barkly Sub-basin within the central Georgina Basin. The company holds exploration licences and has applied for others that collectively cover 2,291 square kilometres of the basin. A number of these tenements are near proven phosphate prospects at Highland Plains, Alexandria, Alroy and Buchanan Dam.

NRE’s exploration activities during the second term of the Barkly Project have included the extensive analysis of its helicopter assisted reconnaissance programs, soil sampling, geological mapping and associated rock chip sampling programs conducted in the first term. NRE has also compiled the results obtained from the phosphate horizon mapping report which was completed in the first term.

The analysis of these activities have assisted NRE in developing two (2) drilling programs across the Barkly Project; one limited Reverse Circulation Drilling program and a further extensive program, assuming the success of the initial drilling program. NRE has begun drafting its Mining Management Plan in respect of the limited Reverse Circulation Drilling program.

NRE looks forward to finalising and lodging its Mining Management Plan with the Department and conducting its limited Reverse Circulation Drilling program in the third term of the Barkly Project.
1. Introduction

Natural Resources Exploration (‘NRE’) exploration rationale and objectives for its (13) exploration licences making up its Barkly Project considered the evaluation of potential phosphate, uranium and diamond mineralisation in the region.

Twelve (12) of the thirteen (13) Exploration Licences were granted to NRE on 20 May 2010, with the remainder licence being granted on 27 July 2010. The exploration licences cover some 2,291 square kilometres of the Barkly Tableland west of the Northern Territory – Queensland border (Figure 1). These licences are located in close proximity to well documented phosphate prospects at Buchanan Dam, Alroy, Alexandria and Highland Plains. The significantly larger Arruwurra and Wonarah prospects are approximately 60 kilometres to the south of the Barkly Project (Figure 2).

During the second year of year grant, NRE has been able to conduct an extensive review of all previous historical data, results obtained from its first term field work including results from its helicopter assisted reconnaissance programs, soil sampling, geological mapping and associated rock chip sampling programs conducted in the first term. NRE has also compiled the results obtained from the phosphate horizon mapping report which was completed in the first term.

Investigations were intended to locate any outcropping of any mineralisation and any indicators of any sub-surface any mineralisation within the tenement. NRE’s activities during the second year of grant have been a great success and have defined targets for a limited drilling program to be conducted during the third term.
Figure 1. Location Map

Figure 2. NRE’s Barkly Project and nearby Phosphate Prospects
2. Tenure

NRE’s Barkly Project consists of thirteen (13) granted exploration licences. In total, the area covered and referred to as the Barkly Project consists of some 708 sub-blocks covering 2,291 square kilometres. Table 1 lists the pertinent tenement details.

Table 1. Tenement Details

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<th>Project Name</th>
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Twelve (12) of the thirteen (13) exploration licences were granted to NRE on 20 May 2010, with the remainder licence being granted on 27 July 2010.

NRE’s Barkly Project overlies five (5) Perpetual Pastoral Leases namely, NT Por 960, NT Por 962, NT Por 1483, NT Por 651 and NT Por 1. These Perpetual Pastoral Leases have been identified in Figure 3.
Native Title

There are currently two (2) Native Title Claims over the area, namely the Dalmore Downs Claim (Tribunal Number DC01/30) and the Mt Drummond Claim (Tribunal Number DC001/12).

Recorded Sites

There are currently five (5) Recorded Sacred Sites within the Barkly Project area.
2.1 Location and Access

Given that the Barkly Project is located in the Barkly Tablelands, access to these tenures is difficult by road. While part of the project is located over the Barkly Highway, it is nevertheless difficult to access the projects due to weather conditions that deteriorate currently available tracks.

The Project is located near Mitiebah Station and the Station is accessed via the Ranken Road (gravel) from the Barkly Highway (sealed). Access to the project is identified in Figure y.

In the first term of the project, field activities over the whole project area were conducted with the assistance of a helicopter. NRE found that the use of a helicopter to conduct work across the project area would ensure that the area was covered in a more timely and efficient manner. The risk of using vehicle access to much of this area would have, in NRE’s view, proved very unsuccessful given the ground coverage in the region.
2.2 Topography and Drainage

The Barkly Tableland is a vast terrain of flat to very gently undulating black soil plains. The variation in elevation from the maximum plain level to the drainage is said to be less than 50 meters (Edgoose, 2003).

The drainage is endoheic and flows to several large, shallow lakes in the centre of the region. On the northern margin of the tableland, topographic definition increases northwards toward the drainage divide with the Gull Fall and its northerly flowing drainage. The tableland’s southern margin is encroached upon by extensive Aeolian sand plains.
3. Geology

3.1 Regional Geology

The Barkly Project lies centrally within the Georgina Basin, straddling the boundary between the Barkly and Undilla Sub-basins (*Figure 5*). Together with the Wiso and Daly Basins, which lie to the west and northwest respectively, the Georgina Basin constitutes an extensive (360,000 square kilometres) remnant of the NeoProterozoic and Palaeozoic sedimentary sequence that was originally deposited across an intra-continental platform that covered a large part of central Australia.

*Figure 5. Regional Geology Map*

The Georgina Basin comprises rocks ranging in age from Neoproterozoic to Devonian and covers an area of approximately 325,000 square kilometres. The Basin is elongated northwest to southeast and regional magnetic data can be used to infer a northwest-southeast structural grain with ridge and depression sub-basin topography.

Stratigraphy and sedimentology
Shergold and Druce (1980) subdivided the Basin sequence into three tectono-stratigraphic units or “tectotopes”.

- Tectotope 1 is Neoproterozoic to Early Cambrian in age and consists of glacial, siliciclastic sediments overlain by marine and marginal marine or continental siliciclastic sediments.

- Tectotope 2 is distributed widely across the Basin, is of Middle Cambrian to Ordovician in age and comprises sequences dominated by carbonates with some early siliciclastic units.

- Tectotope 3 is Ordovician to Devonian in age, dominated by siliciclastic rocks and occurs only in the south.

The significant phosphate deposits of the Georgina Basin occur in the Middle Cambrian and consequently the relevant part of the stratigraphy belongs to tectotopes 1 and 2. The sedimentology across the Basin is complex and consequently the stratigraphy developed by many people working in specific relatively localised areas includes a plethora of units and stratigraphic names.

As Cook (1989) noted that no single stratigraphic column can be provided for the Georgina Basin. *Figure x* is an attempt to reconcile localised stratigraphic interpretations for the Early and middle Cambrian, which is most relevant to the discussion of phosphate mineralisation. The following outline of the geological history of the Georgina Basin from Neoproterozoic to Late Cambrian times is taken largely from Cook (1989).

Sedimentation in the Georgina Basin was initiated in the Neoproterozoic in grabens formed by regional north east- south west extension. Tholeiitic basalts and felsic volcanic rocks were emplaced in the centre and north during the earliest Cambrian; these lie unconformably on Proterozoic basement and include the Helens Springs and Peaker Piper Volcanics. Elsewhere, the basal units of the Georgina Basin comprise conglomerates, sandstones, shales and glacial and fluvial sediments (e.g. Mount Birnie, Riversdale and Mount Hendry Formations).
Ongoing extension and subsidence were accompanied by a marine transgression and by the Middle Cambrian, the Basin was covered by a shallow intra-continental sea, rich in marine life. Extensive limestone and dolomitic sequences (e.g. Thorntonia Limestone and Gum Ridge Formation) were deposited. These also contain evidence for shallow, intertidal and highly saline conditions (e.g. algal structures and pseudomorphs of halite and gypsum crystals).

Following a short break in sedimentation, subsidence continued with the deposition of a sequence of siltstone and sandstones around the Basin margins and carbonate shoals in deeper water. Cook (1989) noted that this was a time when the Basin was characterised by a complex interplay of sedimentary environments, ranging from shallow marine, through intertidal and estuarine to lagoonal. It was also the time when the major phosphatic units (e.g. the Beetle Creek and Wonarah Formations and Anthony Lagoon and Burton Beds) and the phosphorites were deposited.

Formation of the phosphatic units of the Georgina Basin was followed by deposition of black organic-rich shales (Inca Formation) in near shore areas and shallow carbonates throughout most of the Basin. Carbonate sedimentation continued until uplift and erosion associated with the Delemarian Orogeny occurred in the Late Cambrian.
Howard (1990) used bore hole and drillhole, aeromagnetic and gravity data to define a phosphatic lithofacies within the Middle Cambrian of the Georgina, Wiso and Day Basins. The phosphatic horizon has an average width of 32 km and a thickness of between 10 and 190 metres. The strike length exceeds 2000 km. The phosphate deposits in the southeast are slightly younger than those found elsewhere. The dominant lithology of the phosphatic lithofacies is siltstone and the phosphatic horizon occurs either at basin margins, adjacent to Proterozoic basement (e.g. in the eastern Undilla sub-basin and Burke River outlier) or above structural basement highs (e.g. Barkly subbasin).

### 3.2 Permit Geology

The geology within the Barkly Project consists of units which have been mapped and interpreted across the Alroy, Mt Drummond, Brunette Downs and Ranken 1:250K geological sheets by government geologists. The Alroy, Mt Drummond and Brunette Downs geological sheets have been mapped re-mapped as recently as 2011. The Ranken 1:250K geological sheet was last updated in 2005. The project geology is illustrated in Figure 14.

Within the Barkly Project, lithologies have been interpreted as belonging largely to the Barkly Group.
The Barkly Tableland coincides closely with the north-central and northern parts of the Neoproterozoic to Palaeozoic Georgina Basin. Exposures of the basinal sediments in the area are rare, but where present, are typically composed of weakly deformed middle Cambrian carbonate sedimentary rocks. Locally overlying the Palaeozoic rocks are thin deposits of flat lying late Palaeogene limestone. Thin deposits of Cretaceous marine sediments also locally occur in the northern margin of the Barkly Tableland.

The Barkly Group is only limitedly exposes through the Barkly Project where centrally located licences appear to have more Barkly Group exposer than those licences to the west and east.

4. **NRE’s Exploration Activities during the Reporting Period**

In the first term of the licence, NRE completed two (2) reconnaissance helicopter assisted field trips of the Barkly Project, one in July 2010 and the other in October 2010. Field work was followed with detailed literature research and data collation in order to evaluate mineral prospectivity and make recommendations for the next stage of exploration. NRE also engaged specialists to complete a study on the phosphate potential of the Barkly region.
and to prepare a model of NRE’s tenements speculating the depth and extent of the phosphate horizon.

During the second term, NRE has been able to successfully analyse the work conducted in the first term and integrate and collate the results of the specialised phosphate study with all available geological, geophysical and drill and bore hole data and was able to characterise the stratigraphic relationships pertaining to phosphate mineralisation.

NRE has been able to establish the sedimentological and structural controls constraining phosphate deposition, use the sedimentological, stratigraphic and structural models to assess the phosphate potential of the Barkly Project and develop a design for a limited Reverse Circulation Drilling program to better constrain prospective targets within NRE’s Barkly Project.

NRE has tendered out the limited Reverse Circulation Drilling program of works to various drilling contractors and commenced drafting of its Mining Management Plan for the Barkly Project.

4.1 Previous Exploration Studies

NRE has conducted an extensive review of historic exploration over its Barkly Project. Historic exploration in this region has largely been for phosphate and diamond exploration with some uranium exploration. Encouraged by IMC’s success in locating high grade phosphate in the late 1960’s, a number of explorers have continued to search for phosphate in the region.

The Barkly region was part of the Australian Diamond Exploration Joint Venture regional programme to search for kimberlitic pipes. Results varied across the region with microdiamonds recovered, and intrusive pipes located. Recent exploration has favoured base metal mineralisation. A number of historic tenements have covered areas overlapping NRE’s tenures and these are shown in Figure 4 below.
NRE has reviewed a number of previous companies’ exploration reports overlapping its Barkly Project, including those listed in Table 2 below.

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Previous explorers and a summary of their work in the area covered by NRE’s tenures have been detailed below.
**NRE’s EL 27647 – McNichol**

*Mines Exploration - AP1540 (1966)*
The tenement overlaps the south west corner of EL27647. Phosphate exploration was unsuccessful, due to absence of desirable lithologies and low phosphate content of sampled rocks, therefore the area was relinquished.

*IMC - AP1766, AP1788, AP1801, AP1802, AP1897 (1968)*
Exploration by IMC over the Alexandria region overlapped the western side of EL27647. Phosphate deposits found, beneficiation test results good, high grade product can be obtained.

*Mines Exploration - AP1776*
The tenement covered the eastern side of EL27647. The phosphoric sediment was not of economic grade, tenement subsequently relinquished.

*ICI - EL1125 (1976)*
The tenement overlaid the eastern side of EL27647. Only minor phosphate mineralisation was found and localized in extent.

*A.D.E. Joint Venture (Aberfoyle Explorations Pty, Ltd, Ashton Mining Ltd, A.O.G minerals Ltd) - EL4372, EL4373 (1980)*
Regional exploration programme for kimberlite pipes, overlapping all of EL27647. Although a high concentration of microdiamonds was discovered, they were not commercially sized and failed to represent an economic resource.

*EL6571*
This tenement overlaps the eastern half of EL27647. Regional exploration initially looked at diamond potential, but results were disappointing. Exploration then focussed on base metals.

*BHP - EL7203*
The tenement overlaid the south western region of EL27647, with exploration favouring Sedex style base metals mineralisation. Work consisted of ground magnetic s and Sirotex surveys. Depth to basement was interpreted to be greater than 300m, thus excessive and the tenement was relinquished.
NRE’s EL 27653 – Don Creek

**IMC - AP1766, AP1788, AP1801, AP1802, AP1897 (1968)**
Exploration by IMC over the Alexandria region overlapped all of EL27653 except the north west corner. Phosphate deposits found, beneficiation test results good, high grade product can be obtained.

**ICI - EL1125 (1976)**
This tenement overlaps the western side of EL27653. Only minor phosphate mineralisation was found and localized in extent.

**Afmeco - EL2112 (1979)**
The tenement overlaps the eastern side of EL2765. Afmeco exploration programme included airborne geophysics, mapping, stream sediment and rock chip sampling, ground radiometry and drilling. Weak geophysical anomalies were seen, however no significant base metal prospects were identified.

**Australian Diamond Exploration Joint Venture (Aberfoyle Explorations Pty, Ltd, Ashton Mining Ltd, A.O.G minerals Ltd) - EL4372, EL4373 (1980)**
Regional exploration programme for kimberlite pipes, overlapping most of EL27653. Although a high concentration of microdiamonds was discovered, they were not commercially sized and failed to represent an economic resource.

**EL6577**
This tenement covered all except the western margin of EL27653. CRA undertook a comprehensive aeromagnetic and radiometric survey over four tenements, with discrete anomalies selected for follow up work. Fifteen magnetic features were drilled to test potential for kimberlite pipes. Negative results led to the surrender of all tenements in the project.

**Australian Diamond Exploration Joint Venture - EL8101 (1997)**
The tenement was part of ADE Joint venture exploration program for kimberlite pipes, and covered all but the western margin of EL27653. Results were not encouraging and tenement subsequently relinquished.

**Anglo American Exploration (Australia) Pty Ltd - EL10373, EL22162 (2003)**
Part of a regional exploration project over the north western extension of the Lawn Hill Platform, the tenements overlap EL27653 entirely. The exploration target was to discover a large tonnage; sediment hosted massive sulphide Pb-Zn deposit. Drilling results and project re-evaluation led to the prospect being downgraded and tenements surrendered.
NRE’s EL 27659 – Robies Bore

**IMC - AP1766, AP1788, AP1801, AP1802, AP1897 (1968)**
Exploration by IMC over the Alexandria region overlapped the north western half of EL27659. Phosphate deposits found, beneficiation test results good, high grade product can be obtained.

**ICI - EL1125 (1976)**
This tenement overlapped the north west corner of EL27659. Only minor phosphate mineralisation was found and localized in extent.

**Afmeco - EL2112 (1979)**
The tenement overlapped the north west margin of EL2769. Afmeco exploration programme included airborne geophysics, mapping, stream sediment and rock chip sampling, ground radiometry and drilling. Weak geophysical anomalies were seen, however no significant base metal prospects were identified.

**A.D.E. Joint Venture (Aberfoyle Explorations Pty, Ltd, Ashton Mining Ltd, A.O.G minerals Ltd) - EL4372, EL4373 (1980)**
Regional exploration programme for kimberlite pipes, overlapping all of EL27659. Although a high concentration of microdiamonds was discovered, they were not commercially sized and failed to represent an economic resource.

**CRA - EL6577 (1990)**
This tenement covered all of EL27659. CRA undertook a comprehensive aeromagnetic and radiometric survey over four tenements, with discrete anomalies selected for follow up work. Fifteen magnetic features were drilled to test potential for kimberlite pipes. Negative results led to the surrender of all tenements in the project.

**Australian Diamond Exploration Joint Venture - EL8101, EL8102 (1993)**
The tenements were part of ADE Joint venture exploration program for kimberlitic pipes, and overlaps EL27659 entirely. Results were not encouraging and tenement subsequently relinquished.

**Anglo American Exploration (Australia) Pty Ltd - EL10373, EL22162 (2003)**
Part of a regional exploration project over the north western extension of the Lawn Hill Platform, the tenements overlap EL27659 entirely. The exploration target was to discover a large tonnage; sediment hosted massive sulphide Pb-Zn deposit. Drilling results and project re-evaluation led to the prospect being downgraded and tenements surrendered.
Genesis Resources Ltd - EL24840 (2006)
This tenement overlaid all of EL27659, with exploration targeting base-metals, uranium, diamond, gold and palladium. However, lack of regional magnetic anomalies, geological structures or mineral occurrences, the area is not believed to host any significant mineralisation.

NRE’s EL 27665 – Playford River

IMC - AP1766, AP1788, AP1801, AP1802, AP1897 (1968)
Exploration by IMC over the Alexandria region overlapped the southern margin of EL27665. Phosphate deposits found, beneficiation test results good, high grade product can be obtained.

Continental Oil Company, Minoil - AP1874
Tenement overlaid all except the southern margin of EL27665. Exploration programme was designed to investigate known phosphatic horizons for sedimentary base metal mineralisation. Phosphate reserves were considered not economic, a black mineralized shale was considered to have potential for base metals and worthy of further investigation.

ICI Australia Ltd, Australian Fertilizers Ltd - EL1081 (1976)
Tenement overlaid most of EL27665, except the north western corner. Joint venture exploration programme to test phosphate reserves reported by previous explorers. Drilling failed to reproduce high grade phosphoric concentrations.

CRA - EL3536 (1982)
Tenement covers the south east area of EL27665. Exploration sought to investigate the extent of the black mineralised shale previously reported by Conoco. Gravity and ground magnetic surveys failed to delineate the shale and drilling results showed no significant mineralisation.

Australian Diamond Exploration Joint Venture - EL4348, EL4349 (1980)
Regional exploration programme for kimberlite pipes, overlapping all of EL27665. Although a number of microdiamonds were discovered in EL4348, there was little potential for kimberlitic pipes and the tenements were surrendered.

NRE’s EL 27666 – Black Plain

IMC - AP1766, AP1788, AP1801, AP1802, AP1897 (1968)
Exploration by IMC over the Alexandria region overlapped the northern half of EL27666. Phosphate deposits found, beneficiation test results good, high grade product can be obtained.
Continental Oil Company, Minoil - AP1874 (1970)
Tenement overlaid all except the southern half of EL27666. Exploration programme was designed to investigate known phosphatic horizons for sedimentary base metal mineralisation. Phosphate reserves were considered not economic, a black mineralized shale was considered to have potential for base metals and worthy of further investigation.

ICI Australia Ltd, Australian Fertilizers Ltd - EL1081 (1976)
Tenement overlaid the south east corner of EL27666. Joint venture exploration programme to test phosphate reserves reported by previous explorers. Drilling failed to reproduce high grade phosphoric concentrations.

CRA - EL3536 (1982)
Tenement covers the south east section of EL27666. Exploration sought to investigate the extent of the black mineralised shale previously reported by Conoco. Gravity and ground magnetic surveys failed to delineate the shale and drilling results showed no significant mineralisation.

Australian Diamond Exploration Joint Venture - EL4343, EL4349 (1983)
EL27666 was overlain by EL4343 in the north and EL4349 in the south. A number of microdiamonds were recovered in EL4343, but potential to locate kimberlite pipes was downgraded and both tenements surrendered.

BHP - EL8122 (1994)
The tenement covered the northern half of EL27666. BHP conducted a review of all open file data to determine potential for stratiform lead and zinc mineralisation. Low prospectivity lead to the tenement being surrendered.

NRE’s EL 27667 – Alexandria

IMC - AP1766, AP1788, AP1801, AP1802, AP1897 (1968)
Exploration by IMC over the Alexandria region overlay most of EL27667, except for the west margin. Phosphate deposits found, beneficiation test results good, high grade product can be obtained.

Continental Oil Company, Minoil - AP1874 (1970)
Tenement overlaid the western margin of EL27667. Exploration programme was designed to investigate known phosphatic horizons for sedimentary base metal mineralisation. Phosphate reserves were considered not economic, a black mineralized shale was considered to have potential for base metals and worthy of further investigation.
ICI Australia Ltd, Australian Fertilizers Ltd - EL1081, EL1082 (1976)
The tenements overlay all of EL27666. Joint venture exploration programme to test phosphate reserves reported by previous explorers. Drilling failed to reproduce high grade phosphoric concentrations.

Australian Diamond Exploration Joint Venture - EL4530, EL4534 (1985)
The tenements cover all of EL27667. Several microdiamonds recovered, but location of kimberlite pipes unlikely.

Northern Cement - EL4968
Tenement covers the south west section of EL27667. Part of a larger programme to locate high grade gypsum in economic quantities.

NRE’s EL 27668 – Limestone Ridges

Mine Exploration - AP1540 (1966)
The tenement overlaps the northern half of EL27668. Phosphate exploration was unsuccessful, due to absence of desirable lithologies and low phosphate content of sampled rocks, therefore the area was relinquished.

IMC - AP1766, AP1788, AP1801, AP1802, AP1897 (1968)
Exploration by IMC over the Alexandria region overlaid all of EL27668. Phosphate deposits found, beneficiation test results good, high grade product can be obtained.

ICI Australia Ltd, Australian Fertilizers Ltd - EL1081, EL1082 (1976)
Tenements overlaid all of EL27668. Joint venture exploration programme to test phosphate reserves reported by previous explorers. Drilling failed to reproduce high grade phosphoric concentrations.

Australian Diamond Exploration Joint Venture (Aberfoyle Explorations Pty, Ltd, Ashton Mining Ltd, A.O.G minerals Ltd) - EL4372, EL4373 (1980)
Regional exploration programme for kimberlite pipes, overlapping northern half of EL27653. Although a high concentration of microdiamonds was discovered, they were not commercially sized and failed to represent an economic resource.

Australian Diamond Exploration Joint Venture - EL4530, EL4534 (1985)
The tenements cover southern half of EL27668. Several microdiamonds recovered, but location of kimberlite pipes unlikely.
CRA - EL6576
This tenement covered all except the south east corner of EL27668. CRA undertook a comprehensive aeromagnetic and radiometric survey over four tenements, with discrete anomalies selected for follow up work. Fifteen magnetic features were drilled to test potential for kimberlite pipes. Negative results, led to the surrender of all tenements in the project.

BHP - EL7203
The tenement overlaid the northern margin of EL27668, with exploration favouring Sedex style base metals mineralisation. Work consisted of ground magnetic s and Sirotem surveys. Depth to basement was interpreted to be greater than 300m, thus excessive and the tenement was relinquished.

NRE’s EL 27669 – Buchanan

Continental Oil Company, Minoil - AP1874
Tenement overlaid all of EL27669. Exploration programme was designed to investigate known phosphatic horizons for sedimentary base metal mineralisation. Phosphate reserves were considered not economic, a black mineralised shale was considered to have potential for base metals and worthy of further investigation.

ICI Australia Ltd, Australian Fertilizers Ltd - EL1081 (1976)
The tenement overlaid all of EL27669. Joint venture exploration programme to test phosphate reserves reported by previous explorers. Drilling failed to reproduce high grade phosphoric concentrations.

CRA - EL3536 (1982)
The tenement overlaid all of EL27669. Exploration sought to investigate the extent of the black mineralised shale previously reported by Conoco. Gravity and ground magnetic surveys failed to delineate the shale and drilling results showed no significant mineralisation.

Australian Diamond Exploration Joint Venture - EL4349 (1983)
The tenement covered EL27669 entirely. No microdiamonds were recovered, thus tenement potential was downgraded and subsequently surrendered.

NRE’s EL 27670 – Bore 50

Continental Oil Company, Minoil - AP1874
Tenement overlaid all of EL27670. Exploration programme was designed to investigate known phosphatic horizons for sedimentary base metal mineralisation. Phosphate reserves
were considered not economic, a black mineralized shale was considered to have potential for base metals and worthy of further investigation.

ICI Australia Ltd, Australian Fertilizers Ltd - EL1081 (1976)
The tenement overlaid all of EL27670. Joint venture exploration programme to test phosphate reserves reported by previous explorers. Drilling failed to reproduce high grade phosphoric concentrations.

CRA - EL3536 (1982)
Tenement covers the western margin of EL27670. Exploration sought to investigate the extent of the black mineralised shale previously reported by Conoco. Gravity and ground magnetic surveys failed to delineate the shale and drilling results showed no significant mineralisation.

Australian Diamond Exploration Joint Venture - EL4349 (1983)
The tenement covered the western edge of EL27670. No microdiamonds were recovered, thus tenement potential was downgraded and subsequently surrendered.

Australian Diamond Exploration Joint Venture - EL4534 (1985)
The tenement covered all except the western edge of EL27670. Several microdiamonds were recovered; however the potential to locate kimberlitic pipes was low.

NRE’s EL 27671 & 27672 – Little Buchanan & Sandy Crossing

Continental Oil Company, Minoil – AP1874
The tenement overlaid all of EL27671 and EL27672. Exploration programme was designed to investigate known phosphatic horizons for sedimentary base metal mineralisation. Phosphate reserves were considered not economic, a black mineralized shale was considered to have potential for base metals and worthy of further investigation.

ICI Australia Ltd, Australian Fertilizers Ltd - EL1081 (1976)
The tenement overlaid all of EL27671 and EL27672. Joint venture exploration programme to test phosphate reserves reported by previous explorers. Drilling failed to reproduce high grade phosphoric concentrations.

Australian Diamond Exploration Joint Venture - EL4349 (1983)
The tenement covered EL27671 and EL27672 entirely. No microdiamonds were recovered, thus tenement potential was downgraded and subsequently surrendered.
NRE’s EL 27673 – Dolostone Rim

ICI Australia Ltd, Australian Fertilizers Ltd - EL1082 (1976)
The tenement overlay EL27673 entirely. Joint venture exploration programme to test phosphate reserves reported by previous explorers. Drilling failed to reproduce high grade phosphoric concentrations.

Australian Diamond Exploration Joint Venture - EL4349 (1983)
The tenement covered the north west section of EL27673. No microdiamonds were recovered, thus tenement potential was downgraded and subsequently surrendered.

Australian Diamond Exploration Joint Venture - EL4534 (1985)
The tenement covered the south east section of EL27673. Several microdiamonds were recovered; however the potential to locate kimberlitic pipes was low.

NRE’s EL 27819 – Boree

IMC - AP1766, AP1788, AP1801, AP1802, AP1897 (1968)
Exploration by IMC over the Alexandria region covered the northern half of EL27819. Phosphate deposits found, beneficiation test results good, high grade product can be obtained.

Continental Oil Company, Minoil - AP1874
The tenement overlay the southern half of EL27819. Exploration programme was designed to investigate known phosphatic horizons for sedimentary base metal mineralisation. Phosphate reserves were considered not economic, a black mineralized shale was considered to have potential for base metals and worthy of further investigation.

Australian Diamond Exploration Joint Venture – EL4336, EL4343, EL4348, EL4349 (1984)
The tenements combined covered all of EL27819. Several gravel samples were found to contain microdiamonds; however the intensive exploration program failed to locate kimberlite pipes.

BHP - EL8122 (1994)
The tenement covered the northern half of EL27819. BHP conducted a review of all open file data to determine potential for stratiform lead and zinc mineralisation. Low prospectivity lead to the tenement being surrendered.
4.2 Design and Tender of a Limited Reverse Circulation Drilling program

In the first term of the licence, NRE engaged specialists to conduct a study into the phosphate potential of the Barkly region and to prepare a model of NRE’s tenements speculating the depth and extent of the phosphate horizon. NRE completed two (2) reconnaissance helicopter assisted field trips of the Barkly Project, one in July 2010 and the other in October 2010. Field work was followed with detailed literature research and data collation in order to evaluate mineral prospectivity and make recommendations for the next stage of exploration.

During the second term, NRE was able to integrate and collate the results of the specialised phosphate study with all available geological, geophysical and drill and bore hole data and identify various targets for its limited Reverse Circulation Drilling program.

NRE has been able to establish the sedimentological and structural controls constraining phosphate deposition, use the sedimentological, stratigraphic and structural models to assess the phosphate potential of the Barkly Project and develop a design for a limited Reverse Circulation Drilling program to better constrain prospective targets within NRE’s Barkly Project.

5. NRE’s Exploration Activities for next 12 month period

NRE believes that the region is prospective for fairly shallow phosphate mineralisation and NRE has successfully identified various targets for its limited Reverse Circulation Drilling program in its Barkly Project.

The objective of NRE’s exploration activities over the next 12 month period in relation to its Barkly Project is to finalise and lodge its Mining Management Plan in respect of the Project, award the limited Reverse Circulation Drilling program to an acceptable drilling contractor and conduct its limited Reverse Circulation Drilling program.

6. Reports lodged during the reporting period

NRE believes that no other reports were required to be lodged during this reporting period.

7. Conclusions

Natural Resources Exploration’s exploration activities during the second term of its Barkly Project, consisting of thirteen (13) granted Exploration Licences has been focused on determining the mineral prospectivity of the project area and developing a limited Reverse Circulation Drilling program. NRE believes that the region is prospective for fairly shallow phosphate mineralisation and NRE has successfully identified various targets for its limited drilling program in its Barkly Project.
Due to results of NRE’s extensive exploration activities during the first term and second term of grant of these tenures, NRE was able to design a limited drilling program of these tenures. NRE have commenced the preparation of a Mining Management Plan in relation to the program and will aim to lodge the Mining Management Plan with the department early in the third term.

NRE has tendered out the program of works to various drilling contractors and is looking forward to awarding the limited Reverse Circulation Drilling program to an acceptable drilling contractor and conducting its limited Reverse Circulation Drilling program in the third year.

NRE is looking forward to commencing exploration activities during the third term of its Barkly Project.
8. Bibliography


Note many more references are also located in the References section of the Alroy, Brunette Downs, Mt Drummond and Ranken 1:250,000 geological map series explanatory notes.