YEAR 1
ANNUAL GROUP REPORT
SOUTHERN GEORGINA PROJECT

Title Holder
Operator
Tenement Manager
Titles / Tenements
Project Names
Report Title
Type of Report
Author(s)
Company Ref:
Target Commodity / Commodities
Date of Report

NATURAL RESOURCES EXPLORATION PTY. LTD.
Natural Resources Exploration Pty. Ltd.
Becana Devencorn, Natural Resources Exploration Pty. Ltd.
EL(s): 27841, 27842 and 27843.
Corella Bore, Elkera and Arapunga.
Year 1 Annual Group Report – Southern Georgina Project
Annual Group Technical Report
Devencorn, B
NRE_NT2011: SG (Group x3) – Yr 1 Annual Group Report
Phosphate
9 September 2011

NATURAL RESOURCES EXPLORATION PTY. LTD.
PO Box 9235, Gold Coast Mail Centre, QLD 9726
Level 8, Corporate Centre, 2 Corporate Ct, Bundall QLD
Tel: (07) 5510 3707 Fax: (07) 5510 3701
Email: info@naturalresources.net.au
Summary

Section 34 of the Mining Act requires the submission of an Annual Report prepared by the titleholder for each exploration licence. Exploration Licences EL27841, EL27842, and EL27843 have been approved for Annual Group Technical Reporting. This Annual Group Technical Report for these tenures, more commonly known to Natural Resources Exploration (‘NRE’) as its Southern Georgina Project, provides a summary of the activities carried out over the permits in the past 12 months, including any results produced by those activities.

NRE has carried out a detailed geological assessment of its Southern Georgina Prospects, during the first year of grant. NRE’s exploration activities during this first term also included considerable research prior to the commencement of a helicopter reconnaissance program to evaluate the tenements. Research included review and compilation of the data in the Northern Territory Geological Services’ (‘NTGS’) open file reports, air photo imagery and examination of the latest geological maps.

NRE’s helicopter reconnaissance program over the Southern Georgina Project commenced in August 2011, consequently crossing over the first and second term of the licences. NRE’s targeted areas for ground evaluation during this program was on the basis of previous geophysical surveys, in particular aeromagnetics and radiometrics.

Sites are being tested using a scintillometer and by the taking of soil and rock samples. Geological observations and photographs are also being recorded at each site. Finally, earlier in the year, NRE also carried out XRF analysis of water bore cuttings across the Southern Georgina Project held at the Alice Springs Core Library.

The detailed geological assessment of the Southern Georgina Project has led to the following up of possible subsurface mineralisation indicators found in water bore cuttings and based on desktop studies, through a helicopter assisted reconnaissance program. NRE is looking forward to receiving the results of this activity early in the second term of the licences.

NRE has met all work and expenditure commitments for its Southern Georgina Project for the term of the licence.
1. Introduction

Natural Resources Exploration (‘NRE’) has conducted extensive office-based studies and field work during the first year of Exploration Licences forming part of its Southern Georgina Project. The Southern Georgina Project consists of three (3) tenements (EL27841 Corella Bore, EL27842 Elkera and EL27843 Arapunga. The Project is located in the Southern Georgina Basin north of the Plenty Highway.

NRE conducted an extensive review of all previous exploration across the tenements and commenced a reconnaissance helicopter assisted field trip and sampling (soil and rock sampling) across the tenures. NRE also conducted XRF analysis of water bore cuttings across the tenures, held at the Alice Springs Core Library.

NRE’s exploration rationale and objectives for its Southern Georgina Project considered the evaluation of phosphate mineralisation. Investigations during the first year were intended to locate any possible areas of surface or shallow subsurface (<30m) mineralisation across the tenements. NRE’s activities during the first year of grant have been a very successful and have delineated areas for further exploration activities to be conducted during the second term.

Figure 1. Location Map
2. Tenure

NRE’s Southern Georgina Project consists of three (3) granted exploration licences, EL27841, EL27842 and EL27843. Together, these tenures consist of 287 sub-blocks across the Southern Georgina Basin making up an area of approximately 884 square kilometres.

All three (3) tenements were granted on 11 August 2010 for a term of six (6) years. Table 1 lists the pertinent tenement details.

Table 1. Tenement Details

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Tenement Name</th>
<th>Title No. (EL)</th>
<th>Sub-blocks</th>
<th>Sq. Km</th>
<th>Status</th>
<th>Grant Date</th>
<th>Term (Yrs)</th>
<th>Expiry Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern Georgina</td>
<td>Corella Bore</td>
<td>27841</td>
<td>20</td>
<td>64</td>
<td>Granted</td>
<td>11 Aug 10</td>
<td>6</td>
<td>10 Aug 16</td>
</tr>
<tr>
<td></td>
<td>Elkera</td>
<td>27842</td>
<td>10</td>
<td>32</td>
<td>Granted</td>
<td>11 Aug 10</td>
<td>6</td>
<td>10 Aug 16</td>
</tr>
<tr>
<td></td>
<td>Arapunga</td>
<td>27843</td>
<td>254</td>
<td>789</td>
<td>Granted</td>
<td>11 Aug 10</td>
<td>6</td>
<td>10 Aug 16</td>
</tr>
</tbody>
</table>

Native Title

There is currently only one Native Title Claim over the project areas, namely the Sandover River Claim (DC01/69). The location of this Native Title Claim and others in close proximity to NRE tenements are identified in Figure 2 below.
Recorded Sites

The Aboriginal Areas Protection Authority (AAPA) has identified six sites within the boundaries of the ELs.

Pastoral Leases

NRE’s Southern Georgina Project overlies five (5) Pastoral Leases, namely NT Por 757 PPL 1107 (“Derry Downs”), NT Por 481 PPL 1118 (“Arapunga”), NT Por 717 PPL 1098 (“Old MacDonald Downs”), NT Por 2454 PPL 990 (“Huckitta”) and NT Por 482 PPL 1119 (“Jinka”).

2.1 Location and Access

Location

The Southern Georgina group of ELs (EL2741 Corella Bore, EL2742 Elkera and EL2743 Arapunga) are located on the Southern Georgina Basin north of the Plenty Highway. The names of the ELs derive from geographic features within the ELs.
Access

Access to the ELs by road is via the Plenty Highway and then approximately 80 kilometres north along Arapunya Road. All tenures are within 80 kilometres of the Plenty Highway. Access to the tenures are identified in Figure 4.

Figure 4. Location and Access Map

The project is extends across an wide region of the basin margin, spanning between 340 and 500km southeast of Tennant Creek. Existing rail infrastructure lies approximately 130km from the western margin of the project area and the sealed Plenty Highway is the main access route via road. A series of unsealed tracks can be utilized to access tenure, but further clearing may be required to reach all target sites.

3. Geology

3.1 Regional Geology

The Southern Georgina Project tenements are located entirely along the south of the Southern Georgina Basin. The Georgina Basin is a large intracratonic sedimentary basin in central and northern Australia, lying mostly within the Northern Territory and partly within
Queensland. It is named after the Georgina River which drains part of the basin. Deposition of locally up to ca. 4 kilometres of marine and non-marine sedimentary rocks took place from the Neoproterozoic to the late Paleozoic.

Along with other nearby sedimentary basins of similar age such as the Amadeus Basin and Officer basin, the Georgina Basin is to believe to have once been part of the hypothetical Centralian Superbasin that was fragmented during episodes of tectonic activity. The regional geology is shown in Figure 5.

**Figure 5.** Regional Geology Map

The Georgina Basin is a broad, northwest-southwest trending intracratonic depression which underlies an area of some 325,000 square kilometres of the Northern Territory and Queensland. Approximately 60 percent of the basin area lies within the Northern Territory.

The Georgina Basin has a maximum sediment thickness in the south (Toko and Dulcie Synclines) including the areas covered by NRE’s Southern Georgina Project tenements, and east (Bruke River Belt), with a much thinner succession in the central and northern parts of the basin (Barkly and Undilla Sub-basins).
The Georgina Basin contains Cambrian and Ordovician, predominantly marine carbonate and clastic sediments, Devonian continental sediments and, in places, Neoproterozoic clastics. After an initial period of rift filling, sediments were deposited in a series of subtidal to supratidal environments over part of an extensive epicontinental shelf. The Palaeozoic sequence progressively thickens in a south-southeasterly direction, rarely exceeding 400 metres in the northern half of the basin, and reaching about 5000 metres in the southeast of the basin. The sedimentary sequence has been neither metamorphosed nor intruded by igneous rocks.

In the latest Cambrian, the Delamerian Orogeny caused a change to predominantly marine siliciclastic deposition in the southwest, with carbonate deposition continuing in the southeast. This pattern persisted until deposition ceased during the Middle Ordovician. In the Early to Late Devonian, the Arunta Block was uplifted during a phase of the Alice Springs Orogeny and fluvial siliciclastics deposited along the southern margin of the basin. Despite extensive potential source rocks in the early Middle Cambrian of the southern part of the basin, numerous oil shows and an uneconomic gas flow in Ethabuka 1, little exploration has been undertaken.

The basin has been deformed by minor to moderate folding and faulting, especially in the south and east, with moderate to severe folding and faulting and extensive overthrusting along the southern and southwestern margin. Most of the structural deformation occurred during the Late Devonian to Early Carboniferous Alice Springs Orogeny. The northern part of the Georgina Basin sequence is gently undulating with no pronounced folding recognised other than supratenuous (drape) folding.

### 3.2 Permit Geology

The permit / local geology within the Southern Georgina Project are generally poorly outcropping. The geology includes Cambrian units of the Georgina Basin with some remnant Cretaceous of the Dunmarra Basin and regolith (silcretes and calcrites) of Tertiary and Quaternary age.

The southern region contains the thickest basinal successions, and demonstrates the strongest structuring related to distal effects of the 320Ma Alice Springs Orogeny. In contrast to the southern region, the central Georgina Basin, north of latitude 21°S, contains a relatively thin stratigraphic succession, up to 450 m thick, deposited on a tectonically quiescent platform. Deposition in the central region commenced with a marine transgression in the early Middle Cambrian and may have extended into the Late Cambrian.

This central platform has been subdivided into an eastern Undilla Sub-basin and a western
Barkly Sub-basin, separated by the Alexandria-Wonarah Basement High. The northern Georgina Basin is largely concealed beneath Mesozoic sedimentary rocks of the Dunmarra Basin (NTGS, 2010). Locally overlying the Palaeozoic rocks are thin deposits of flat lying late Palaeogene (c. 25Ma) limestone. Thin deposits of Cretaceous marine sediments also locally occur on the northern margin of the Barkly Tableland (Edgoose, 2003).

Phosphatic marine sediment (phosphorite) occurs in the Middle Cambrian and Middle Ordovician rocks of the Georgina Basin. Australia’s largest deposits of sedimentary phosphorite are situated in the Cambrian stratigraphy across this region (Freeman et al., 1990). A model outlining the interpreted phosphatic horizon extent has been developed, extending in to the the Dunmarra and Wiso Basins.

The geology has been mapped and interpreted across the Huckitta 1:250,000 geological sheets by government geologists. The permit geology is illustrated in Figure 6 below.

Figure 6. Permit Geology Map

Economic phosphate deposits in Middle Cambrian rocks are being mined at Phosphate Hill across the border in Queensland. Development and exploration is being carried out at a series of further phosphate deposits and prospects across the basin within the Northern Territory.
A series of the deposits within the Georgina Basin that have had resources calculated to date are outlined in Table 2. Note that only those marked with an asterix (*) are considered JORC compliant, all others are documented historical occurrences reported with substantial bulk mineralisation estimates. Further drilling at these prospects is required to meet today’s resource reporting standards.

Table 2. Currently documented phosphate resources in the Georgina Basin.

<table>
<thead>
<tr>
<th>NAME</th>
<th>RESOURCE</th>
<th>COMPANY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wonarrah</td>
<td>969 Mt @ 19% P2O5*</td>
<td>Minemakers Ltd</td>
</tr>
<tr>
<td>Arruwurra</td>
<td>136 Mt @ 17% P2O5*</td>
<td>Minemakers Ltd</td>
</tr>
<tr>
<td>Alexandria</td>
<td>15 Mt @ 10% P2O5</td>
<td>Phosphate Australia Ltd</td>
</tr>
<tr>
<td>Highland Plains</td>
<td>56 Mt @ 16% P2O5*</td>
<td>Phosphate Australia Ltd</td>
</tr>
<tr>
<td>Alroy</td>
<td>5 Mt @ 20% P2O5</td>
<td>Phosphate Australia Ltd</td>
</tr>
<tr>
<td>Buchanan Dam</td>
<td>8 Mt @ 20% P2O5</td>
<td>Phosphate Australia Ltd</td>
</tr>
<tr>
<td>D-Tree* (Queensland)</td>
<td>250 Mt @ 18.6% P2O5</td>
<td>Legend International Holdings</td>
</tr>
</tbody>
</table>

4. NRE’s Exploration Activities during the Reporting Period

NRE’s exploration program for the first term consisted of an initial regional assessment of areas within the Southern Georgina Project for phosphate. The targets within the Southern Georgina Project areas were identified based on desk top research of regional geological and geophysical data, augmented with compilation and assessment of all previous exploration results.

The aim of work was to identify areas for a helicopter assisted reconnaissance field program which would include mapping and sampling of prospects identified across all three (3) tenements based on desktop studies. An array of material was assessed prior to field work to assist with optimal target generation and included:

- Data from all previous exploration as documented in open file reports retrieved from the Northern Territory Government, including:
  - Surface geological sampling,
  - Geochemical anomalism mapping,
  - Geological mapping,
  - Detailed geophysical survey data,
  - Geophysical anomalism mapping,
• Drilling results, and
• Local and regional geological assessments and conclusions derived from exploration programs.

• Water bore data available for all bores drilled in the regions of interest. This data includes geological logging and water assaying.

• Geological maps provided by the Northern Territory Government.

• Aeromagnetics, aero-radiometrics and gravity surveys provided by the Northern Territory Government.

• Satellite imagery, ASTER and Google Earth imagery.

• Data supplied by landowners in relation to geological and topographic features of interest on their properties.

4.1 Previous Exploration Studies

NRE has conducted an extensive review of historic exploration over its Southern Georgina Project. The Georgina Basin hosts Australia’s most economic phosphate deposits in the Middel Cambrian rocks, such as Phosphate Hill across the border in Queensland and Wonarah in Southern Georgina Basin. There has been exploration for a variety of commodities across the Southern Georgina ELs targeting mainly base metal, diamond and phosphate mineralisation.

The southern margin of the Georgina Basin is nevertheless considered historically under explored but is now being actively targeted for its phosphate potential by several companies. Previous exploration has been summarised in \textit{Table 3} and location of historic tenements is shown in \textit{Figure 7}.
Figure 7. Historic tenements over NRE’s Southern Georgina Project.

Table 3. Historic Tenures

<table>
<thead>
<tr>
<th>Tenure</th>
<th>Granted</th>
<th>Company Reports</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>EL 22528</td>
<td>2001-2004</td>
<td>CR2004-0305</td>
<td>Elkedra Diamonds NL</td>
</tr>
<tr>
<td>EL 834</td>
<td>1973-1974</td>
<td>CR1973-0195</td>
<td>CRA Exploration Pty Ltd</td>
</tr>
<tr>
<td>EL 377</td>
<td>1972-1973</td>
<td>CR1972-0083</td>
<td>Asarco Australia Pty Ltd</td>
</tr>
<tr>
<td>EL 1250</td>
<td>1976-1977</td>
<td>CR1977-0106</td>
<td>Carpentaria Exploration Pty Ltd</td>
</tr>
</tbody>
</table>
NRE’s holdings have been strategically selected to optimise the likelihood of discovery in this region. Phosphate mineralisation has been delineated in close proximity to NRE’s tenure at the Marqua, Ammaroo and Lucy Creek Projects. Geological correlation indicates that NRE’s project area has potential to host similar mineralisation.

Phosphate exploration in each of these areas is in its early stages, with promising early intercepts at each project including the following:

**Marqua:** 10m@14.5% P₂O₅ from 9m (including 3m@25.1% P₂O₅) and 8m@18.8% P₂O₅ from 11m (including 3m@27.1% P₂O₅).

**Ammaroo:** 20m@16.7% P₂O₅ from 34m and 13m@14.2% P₂O₅ from 23m.

**Lucy Creek:** 10m@22.5% P₂O₅ and 40m @ 18.09% P₂O₅ (including 10m@31.95% P₂O₅)

### 4.2 Helicopter Reconnaissance

NRE commenced a reconnaissance helicopter assisted field trip of the Southern Georgina Project in August 2011 which will continue and overlap with the second term of the licences. NRE introduced themselves to local landholders ([*Figure 8*](#)), have assessed and are continuing to assess a number of field targets across the tenement and carried out geological mapping of the project area.

In order to delineate prime phosphate targets, NRE integrated new discovery data with all historic exploration information and up to date geophysical and hyperspectral imagery.

The helicopter assisted field trip is successful in evaluating the tenements in the most effective and timely manner possible.
Field assessment of the prospects involved an initial low fly over before determining whether a landing was viable for each target site. In most cases, a landing was made. Assessment at each site involved a variety of the following tasks:

- Geological and structural note taking and measurements
- Radiometric measurements
- Collection of soils and rock chips
- Observations of outcrop boundaries where relevant
- Botanical and physiographic appraisal
- Photography of the features of interest at each site.

Detailed geological characteristics are being recorded at each site and bulk surface samples are being collected. In addition to planned target sites, all areas identified in the air as being characterized by features anomalous to that mapped or revealed in currently available data sets have been or are being assessed.

NRE’s geologists are scheduled to return to the field in the coming days and upon returning, will compile and summaries all data collected on the field in order to assemble a comprehensive report outlining details of each of the tenements’ mineral prospectivity and recommendations for the next phase of exploration.
All samples are currently being assessed with a portable XRF for any mineralisation, before being send to the ALS Laboratories for more detailed assessment.

NRE hopes to achieve from this activity, geological ground truthing and the identification of new information regarding surface characteristics across the region. NRE also will confirm regional geological mapping during these activities while noting observations at all target sites and detailing the settings of each of those sites. This will ensure any follow up work is carried out with optimal effectiveness.

All field observations and assay data collected from the field trip will be assimilated in order to optimally define prospectivity based on this work. Integration with all available data sets enabling further delineation of mineral potential is likely to occur early in the second term.

4.3 Rock Chip Sampling & Ground Geological Mapping

During the helicopter reconnaissance program in August 2011, rock chip and grab bulk soil samples were and are still currently being taken. Given that these field activities are crossing over two (2) licence periods, it is currently unknown how many samples in total will have been taken during the helicopter reconnaissance program.

The location and results of all rock chip samples and grab bulk soil samples will also only be known early in the second term of the licences and as such. Given that the current activities are currently crossing over two licence periods, it is not possible to provide any further comment on these activities until completion in the second term.

4.4 Water Bore Cuttings Analysis

NRE engaged Terra Search Pty. Ltd. to attend the Northern Territory’s Alice Springs Core Facility to analyse a number of cuttings available from historically drilled water bores in and around its Southern Geogina Project (Figure 9).
The Northern Territory Geological Survey (NTGS) maintains a database and storage facility for samples from historic water bores drilling in the Northern Territory. The total number of drill holes for which records are kept is approximately 34,250.

NTGS has, for research and exploration purposes, made available access to both their records and descriptions of the water bores as well as physical access to the samples kept for a large number of the bores at their facilities in both Darwin and Alice Springs. The water bore samples are kept in either Darwin or Alice Springs, according to the proximity of the water bores to these cities. All the water bore data relevant to the Southern Georgina Project was located at the Alice Springs Core Facility.

In March 2011, the Department kindly allowed NRE to set-up in the Alice Springs Core Facility where NRE’s geologists undertook analysis of the water bore cuttings using a hand-held XRF device and re-logged water bores. Within or close to the Southern Georgina Project tenements, a total of 2 water bores have been reviewed and data entered into the Terra Search SQL relational database. Full analytical results are listed in Appendix I.

NRE lodged an Exploration Report with the Northern Territory Department of Resources’ Geoscience Division on 12 September, 2011. This report was required in respect of the XRF and ALS Assaying of Water Bore Chips at the Alice Springs Core Facility. The Exploration Report was titled ‘XRF & ALS Assaying of Water Bore Chips – Core Facility: Alice Springs’.
5. NRE’s Exploration Activities for next 12 month period

The objective of NRE’s exploration activities over the next 12 month period in relation to the Southern Georgina Project is to process all samples it obtained during this years’ helicopter reconnaissance field program. NRE’s objective will be to then study all available data obtained from the reconnaissance program with the data compiled during desktop studies in order to identify any surface mineralisation requiring immediate follow-up.

On identifying any immediate follow up targets, it is envisaged that NRE will conduct more detailed and targeted sampling activities over those identified targets and possibly design a limited drilling program to better define any given target.

NRE also foresees that its Mining Management Plan will be lodged with the Department of Resources later into the second half of Year 2.

6. Reports lodged during the reporting period

NRE lodged an Exploration Report with the Northern Territory Department of Resources’ Geoscience Division on 12 September, 2011. This report was required in respect of the XRF and ALS Assaying of Water Bore Chips at the Alice Springs Core Facility. The Exploration Report was titled ‘XRF & ALS Assaying of Water Bore Chips – Core Facility: Alice Springs’.

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

7. Conclusions

Natural Resources Exploration’s (‘NRE’) exploration activities during the first term of its Southern Georgina Project has been focused on delineating surface targets within the three (3) tenures, namely Exploration Licences (EL)27841, 27842 and 27843. These activities included desktop studies and the commencement of a helicopter reconnaissance program to conduct geological mapping, ground truthing and sampling. Earlier activities in the term also included analysis of water bore cuttings using XRF analysis.

NRE’s activities to date in relation to surface targets have lead to the following conclusions:

Phosphate Potential

There is currently phosphate potential in respect of all three (3) of NRE’s tenures forming part of its Southern Georgina Project. NRE believes that the phosphate potential in these
tenures could be quite shallow given their location along the edge of the southern Georgina Basin. This is further supported by the close proximity of these tenures to the Marqua Phosphate Project (10m @ 14.5 P2O5 from 9m), Ammaroo Phosphate Project (20m @ 16.7% P2O5 from 34m) and the Lucy Creek Phosphate Project (10m @ 22.5% P2O5 from 40m). It would appear that eventually, a RAB/Aircore or Reverse Circulation percussion drilling would be required to test for phosphatic horizons within these tenures.

NRE’s activities during the second year of this project will be focused on the assessment of the results it obtained in respect of the helicopter reconnaissance program. It will be focused on identifying further surface targets requiring follow up work and design programs in relation to these. It is envisaged that these programs would include more detailed sampling programs and the possible design of a limited drilling program over those areas in order to justify the lodgement of a Mining Management Plan.

NRE is looking forward to commencing exploration activities during the second term of its Southern Georgina Project.
8. Bibliography


Note these (and many more) references are also located in the References section of the Huckitta 1:250,000 geological map series explanatory notes.
Annexure I

Geochemical Results of Water Bore Analysis