NORTH BOXER
(EL27817)

Title Holder: NATURAL RESOURCES EXPLORATION PTY. LTD.
Operator: Natural Resources Exploration Pty. Ltd.
Tenement Manager: Nicole Munro, Natural Resources Exploration Pty. Ltd.
Titles / Tenements: EL(s): 27817
Project Names: North Boxer
Report Title: Final Report – North Boxer (EL27817)
Type of Report: Final Report
Author(s): N. Munro, P. Forder
Company Ref: NRE_NT2013: NORTH BOXER Final Report
Target Commodity / Commodities: Diamonds and Base Metals
Date of Report: 20 August 2013

Contact Details:
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) 5644 5500    Fax: (07) 5528 4558
Email: info@naturalresources.net.au
Copyright Statement

This document and its content are the copyright of Natural Resources Exploration Pty. Ltd. The document has been written by Natural Resources Exploration Pty. Ltd. for submission to the Northern Territory Department of Mines and Energy as part of the tenement reporting requirements of the Mineral Titles Act.

Any information included in the report that has been originated or sourced from historical open file reports or other sources is listed in the “Exploration Studies - Historic” section within the document.

The Minister has authority to publish the copyrighted information accordingly.
Contents

Summary............................................................................................................3
1. Introduction .................................................................................................5
2. Tenure .........................................................................................................6
   2.1 Location and Access..................................................................................8
   2.2 Topography and Drainage.........................................................................9
3. Geology ......................................................................................................10
   3.1 Regional Geology ....................................................................................10
   3.2 Permit Geology .......................................................................................13
4. NRE’s Exploration Activities during the Reporting Period...........................14
   4.1 Exploration Studies ..................................................................................15
   4.2 Water bore cuttings..................................................................................19
   4.3 Helicopter Reconnaissance .....................................................................20
5. Reports lodged during the reporting period...............................................19
6. Conclusions ...............................................................................................20

Bibliography .....................................................................................................21

Figures
Figure 1. Cadastral Map....................................................................................7
Figure 2. Location and Access Map...................................................................9
Figure 3. Topography Map and Drainage Map ...............................................10
Figure 4. Regional Geology Map .....................................................................12
Figure 5. Simplified Stratigraphic Column......................................................13
Figure 6. Permit Geology Map.........................................................................14
Figure 7. Historic tenements over the Jervois Range Project...........................19

Tables
Table 1. Tenement Details..............................................................................7
Table 2. Historic Tenures................................................................................16
Table 3. Water Bores tested within EL 27817.................................................19
Summary

Section 94 of the *Mineral Titles Act* requires the submission of reports prepared by the titleholder for each Exploration Licence about the authorised activities conducted under the title and other matters relating to the title. The following report is a Final Report for Exploration Licence (EL) 27817, known to NRE as its ‘North Boxer Prospect’, prepared by Natural Resources Exploration (‘NRE’).

During the first year of grant, Natural Resources Exploration (‘NRE’) has carried out a detailed geological assessment of Exploration Licence (EL) 27817, known to NRE as its ‘North Boxer’ Prospect. To delineate prospective areas for diamonds and base metal mineralisation and define the next phase of exploration NRE has conducted extensive office-based studies and field work during the entire term of the North Boxer Prospect. In the first term, NRE conducted an extensive review of all previous exploration across the tenement. NRE also completed a reconnaissance helicopter assisted field trip in order to further delineate targets and analysed all water bore cuttings in the nearby area. During the second term, NRE conducted a more detailed office based study in order to analyse all of the possible datasets and further refine the target areas. These results along with any interpretations made from them are outlined in NRE’s Year One and Year Two Annual Group Report for the South Nicholson Tenements.

Based on the assessment of the activities conducted within EL27817 itself, NRE made application to the Department to completely surrender the entire title for EL27817 under section 103 of the *Mineral Titles Act*.

The purpose of the following Final Report for EL27817 is to provide a summary of the activities carried out over the entire area of EL27817 up to the time when the title ceased to be in force, including any results produced by those activities.

NRE’s exploration rationale and objectives for its North Boxer Prospect considered the evaluation of potential diamonds and base metal mineralisation. Investigations were intended to locate any outcropping of mineralisation and any indicators of any sub-surface mineralisation within the tenement. NRE carried out a detailed geological assessment of EL27817 including considerable research and extensive office-based studies. 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 believes that there is no rehabilitation required in relation to EL27817 as no field activities involving substantial land disturbance have been carried out during the term of the licence.
1. Introduction

Natural Resources Exploration (‘NRE’) was granted EL 27817 on 27 July 2010, consisting of a total of 168 sub-blocks. EL27817 is located in the north east of the Northern Territory, approximately 700 kilometres northeast of Alice Springs. The North Boxer Prospect is located within the Mesoproterozoic-Palaeoproterozoic South Nicholson Basin southwest of the Murphy Tectonic ridge.

NRE’s exploration rationale and objectives for its North Boxer Prospect considered the evaluation of diamond and base metal mineralisation within the tenements. The Project was also considered for other targets such as phosphate and uranium during the early phases of exploration. Investigations during the first and second term have been intended to locate any outcropping of mineralisation and any indicators of any subsurface mineralisation across the tenements.

In the first term, NRE conducted an extensive review of all previous exploration across the tenement. NRE also completed a reconnaissance helicopter assisted field trip in order to further delineate targets and analysed all water bore cuttings in the nearby area. During the second term, NRE conducted a more detailed office based study to analyse all of the possible datasets and further refine the target areas.

Based on the exploration activities conducted on EL27817, NRE made application to the Department to completely surrender the entire title for EL27817 under section 103 of the Mineral Titles Act. EL27817 was surrendered on 18 July 2013. During the entire term of its licence period, NRE was the sole titleholder and operator of EL27817.
2. **Tenure**

NRE’s exploration licence (EL) 27817, is more commonly known by NRE as its ‘North Boxer Prospect’. EL 27817 was granted to NRE on 27 July 2010 consisting of 168 sub-blocks and covering an area of approximately 548.40 square kilometres across the South Nicholson Basin.

*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>Surrender Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Nicholson</td>
<td>North Boxer</td>
<td>27817</td>
<td>168</td>
<td>548.40</td>
<td>Surrendered</td>
<td>27-Jul-10</td>
<td>18-Jul-2013</td>
</tr>
</tbody>
</table>

**Native Title**

There is currently one (1) Native Title Claim over the project area, namely the Cresswell / Benmara Native Title Claim (Tribunal Number DC01/38).

**Pastoral Leases**

NRE’s South Nicholson Project overlies one (1) Pastoral Lease, namely NT Portion 963 PPL 963 (“Benmara”). NRE has made contact with land holders in the areas of the Project to enable a good initial working relationship to be formed and assist in identifying access routes and other important geographical features.

The location of these leases in relation to the South Nicholson Project is shown in *Figure 1* below.
2.1 Location and Access

Location & Access

Exploration Licence (EL) 27817 is located approximately 700 kilometres north east of Alice Springs. The tenure is accessed via the Tablelands Highway followed by Calvert Road and followed by various unsealed station tracks. The access used by NRE was via a station track from Mittiebah Homestead. Access to the area from Mittiebah is across 40 kilometres of flat Mitchell grass plains (Tertiary regolith).

Location and Access to the project is shown in Figure 2.
2.2 Topography and Drainage

The North Boxer Prospect is located largely on low undulating and flat grassed plains to the north of Mittiebah station. These plains are of the order of 300m AHD. The flat area drains into Fish Hole Creek which flows to the west eventually joining Brunette Creek at Brunette Downs station. Brunette Creek flows south west into Lake Sylvester.

A topographic map of the South Nicholson Project is shown in Figure 3 below.
3. Geology

3.1 Regional Geology

The North Boxer tenement is located entirely within the Mesoproterozoic-Palaeoproterozoic South Nicholson Basin, a western extension of the Lawn Hill Platform sequence which forms part of the North Australian Platform Cover.

To the east, this sequence hosts the large Sedex Century Zn deposit. To the north the mainly Mesoproterozoic Lawn Hill Platform onlaps the Paleoproterozoic Murphy Tectonic Inlier. The Murphy Tectonic ‘Ridge’ acts as a barrier between the South Nicholson Basin to
the south and the McArthur Basin to the north. More detailed regional geology can be seen in

**Figure 4.**

The South Nicholson Basin unconformably overlies rocks of the Lawn Hill Subprovince of the Western Fold Belt Province, across the Queensland-Northern Territory border (Figure 3). The only significant mineralisation recorded within the rocks of the basin is sedimentary ironstone in the Constance Range area (Harms, 1965) where oolitic hematite, siderite and chamosite beds occur within the Train Range Ironstone Member.

Rock units in the South Nicholson Basin include the Benmara Group and the South Nicholson Group. The latter are largely clastic sediments, sandstones conglomerates and siltstones, along with chemical sediments, dolomites and dolomitic siltstones and includes the Crow and Playford Formations and Mittiebah Sandstone. These rocks are weakly metamorphosed, with sandstones often indurated and quartzitic in character. The Benmara Group includes the Buddycurra Volcanics and Breakfast Sandstone.

The Murphy Province which underlies the South Nicholson Basin is made up of the Palaeoproterozoic Murphy Metamorphics and the co-magmatic Cliffdale Volcanics and Nicholson Granite Complex. The Murphy Metamorphics consist of shale, siltstone, sandstone and felsic volcanic rocks converted to schist and gneiss by greenschist facies metamorphism. These rocks are isoclinally folded along east-west axes and are unconformably overlain by the Cliffdale Volcanics. Their upper age limit is constrained by the older phases of the Nicholson Granite Complex at 1820±103Ma. The lower part of the Cliffdale Volcanics is dominated by ignimbrite whilst the upper part consists essentially of flow-banded alkali rhyolite and minor tuff dated at 1730±20Ma. The Nicholson Granite Complex intrudes both the Murphy Metamorphics and Cliffdale Volcanics and consists of granodiorite and granite.

A general stratigraphic column illustrating the rock relationships across part of the Mt Drummond 1:250,000 geological map is shown in **Figure 5.**
Figure 4. Regional Geology Map
3.2 Permit Geology

The geology within the South Nicholson Project is generally poorly outcropping. Proterozoic units outcrop in EL27817. Nevertheless, in the area of current interest the surface is dominated by Tertiary and Quaternary units with some subdued Proterozoic units. The geology has been mapped and interpreted across the Mt Drummond 1:250,000 geological sheet by government geologists who worked the area in two (2) phases, 1972 and 2008.

Within the North Boxer tenement, the major Proterozoic units are, from oldest to youngest, as follows: Benmara Group consisting of the Buddycurra Volcanics and Breakfast Sandstone. The Buddycurra Volcanics include trachytic volcanics and siltstone and sandstone sequences. The Benmara Group rocks only occur through the centre of the South Nicholson Project in a southwest – northeast direction.
The permit geology is illustrated in Figure 6 below.

Figure 6. Permit Geology Map

Unconformably above the Benmara Group is the South Nicholson Group. This consists of the Playford Sandstone, Crow Formation and Constance and Mittiebah Sandstones in the project area. These latter two are probably coeval. The rock types in these units are usually sandstones and siltstones of varying grain size, from pebble conglomerates to finer shales and claystones.

4. NRE’s Exploration Activities during the Reporting Period

NRE’s exploration program for the first term of EL27817 consisted of an extensive review of the tenement in order to delineate potential diamond and base metal surface targets within the area. Following NRE’s desktop studies, a reconnaissance helicopter assisted field trip of EL27817 was carried out. All of the results and samples collected during this helicopter reconnaissance are detailed in the Year One and Year Two Annual Group Reports for NRE’s South Nicholson Group of tenements.
NRE has been unable to identify any subsurface mineralisation within EL27817 in respect of diamonds and base metals. NRE believes that no further exploration is warranted within EL27817 at this time.

During the reporting period, NRE made application to the Department to completely surrender the entire title for EL27817 under section 103 of the *Mineral Titles Act*. EL27817 was surrendered on 18 July 2013.

### 4.1 Exploration Studies

The South Nicholson Basin has been explored for phosphate, base metals, uranium gold and diamonds. NRE has conducted an extensive desktop review over the North Boxer tenement area, including:

- Review of previous exploration data from NTGS open file company reports; and
- Review of aeromagnetics, radiometrics and gravity survey provided by NTGS; and
- Review of satellite imagery, of ASTER imagery, Google Earth Imagery.

A quick review of the historical exploration conducted in the area of the North Boxer tenement is outlined below:

Uranium exploration began initially with Esso reporting anomalous uranium results which led to subsequent exploration by Mines Administration and Afmeco and most recently, Crescent Gold Ltd. IMC Development Corporation were successful in locating a number of phosphate deposits. CEC, MIM, BHP and Amoco have all unsuccessfully explored for base metals.

Based on historical recovered indicator grains around the region, the licence area has potentially hidden kimberlite sources and highly prospective for diamonds. Previous diamond exploration has already tested many of the geophysical targets in this area of poor drainage and outcrop. Diamond exploration by ADE Joint venture and later De Beers, recovered numerous microdiamonds, Ashton Mining recovered fine diamonds in creeks further to the west.

Historical data shows that De Beers believed the area was interesting with a considerable number
of heavy mineral samples collected. Possible interest was triggered after recovering a possible picroilmenite in November 1983 from sample T9308, just 18.5km ENE of the target area (Burton, 1985), and scatters of positive results further east in Cleanshin and Soak Creeks.

This explains the long rows of loane samples by De Beers located to the northeast of the target area. De Beers were ultimately unsuccessful in locating kimberlite pipes.

The nearest heavy mineral samples are from a drillhole by Ashton Mining into a small magnetic target, about 4km to the WNW (Ashton Mining, 1988), as part of their diamond exploration approach of drilling magnetic and aerial photo features. Drilling intersected weathered trachyte/basalt and results were negative. But the supplied magnetic susceptibility is not very convincing that a magnetic source had been intersected. (Ashton Mining, 1988).

Previous exploration has been summarised in Table 2 and location of historic tenements is shown in Figure 7.

Table 2. Historic Tenures

<table>
<thead>
<tr>
<th>TENURE</th>
<th>PERIOD</th>
<th>COMPANY REPORTS</th>
<th>COMPANY</th>
</tr>
</thead>
<tbody>
<tr>
<td>EL 9989</td>
<td>2002</td>
<td>CR2002-0391</td>
<td>Plenty River Corporation Ltd</td>
</tr>
<tr>
<td>EL 9991</td>
<td>2002</td>
<td>CR2002-0391</td>
<td>Plenty River Corporation Ltd</td>
</tr>
<tr>
<td>EL 10350</td>
<td>2002</td>
<td>CR2002-0391</td>
<td>Plenty River Corporation Ltd</td>
</tr>
<tr>
<td>EL 22994</td>
<td>2002 - 2004</td>
<td>CR2003-0482</td>
<td>De Beers Australia Exploration Ltd</td>
</tr>
<tr>
<td>EL 10365</td>
<td>2002</td>
<td>CR2002-0391</td>
<td>Plenty River Corporation Ltd</td>
</tr>
<tr>
<td>EL 4388</td>
<td>Details not listed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AP 444</td>
<td></td>
<td>CR1956-0004</td>
<td>Enterprise Exploration Co Pty Ltd</td>
</tr>
<tr>
<td>Ref</td>
<td>Period</td>
<td>CR Numbers</td>
<td>Company Name</td>
</tr>
<tr>
<td>-------</td>
<td>--------------</td>
<td>---------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>AP 1801</td>
<td>1967 - 1968</td>
<td>CR1968-0030</td>
<td>IMC Development Corp</td>
</tr>
</tbody>
</table>
4.2 Water bore cuttings

NRE also engaged Terra Search Pty. Ltd. to attend the Northern Territory’s Darwin Core Facility to analyse a number of cuttings available from historically drilled water bores within its project areas. Four (4) water bores are located within EL 27817. NRE’s geologists undertook analysis of the water bore cuttings using a hand-held XRF device.

<table>
<thead>
<tr>
<th>Hole_ID</th>
<th>MGA_53_Easting</th>
<th>MGA_53_Northing</th>
<th>Final Depth (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RN007716</td>
<td>681389.5</td>
<td>7991416.2</td>
<td>56.4</td>
</tr>
<tr>
<td>RN007749</td>
<td>688455.4</td>
<td>8007800.1</td>
<td>56.4</td>
</tr>
<tr>
<td>RN007759</td>
<td>688014.4</td>
<td>7999106.2</td>
<td>47.2</td>
</tr>
<tr>
<td>RN007798</td>
<td>673204.5</td>
<td>7993183.2</td>
<td>45</td>
</tr>
</tbody>
</table>
4.2 Helicopter Reconnaissance, Geological Mapping & Sampling Program

NRE commenced a helicopter reconnaissance assisted field trip of the North Boxer Prospect in July 2010. NRE introduced themselves to the local landholders, assessed a number of field targets across the tenement and carried out geological mapping of the project area. The field trip proved successful in evaluating the tenement in the most effective and timely manner possible.

During the helicopter reconnaissance program, no rock chip or soil samples were collected in the tenement area. However, any geological interpretations from this helicopter reconnaissance have already been reported on in NRE’s first year and second year Group Annual Reports for the South Nicholson Group of tenements.

5. Reports lodged during the reporting period

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

6. Conclusions

Natural Resources Exploration’s (‘NRE’) exploration activities for its North Boxer Prospect have been focused on delineating surface targets for diamonds and base metal mineralisation. NRE has conducted extensive reviews in relation to EL27817, has made an assessment of aeromagnetic, gravity and radiometric data and believes there is no strong anomalism indicative of potential sub-surface mineralisation within the tenure.

NRE believes that this tenure holds low mineral prospectivity and no further exploration is warranted at this time. NRE made application to the Department to completely surrender the entire title for EL27817 under section 103 of the Mineral Titles Act. EL27817 was surrendered on 18 July 2013.

NRE believes that there is no rehabilitation required in relation to EL27817 as no works involving land disturbance have been carried out during the term of the licence.
Bibliography


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