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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.
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Summary

Section 94 of the *Mineral Titles Act* requires the submission of a Relinquishment Report prepared by the titleholder for each current Exploration Licence. This Partial Relinquishment Report for EL27640 offers a summary of the activities undertaken on the relinquished area for the life of the permit, including any results produced by those activities.

Natural Resources Exploration ('NRE') is the sole titleholder and operator of EL27640. NRE was granted EL27640 on 20 April 2010 for a term of six (6) years. NRE was subsequently granted the approval from the Department of Resources to incorporate this tenure into Group Technical Reporting for the project area known by NRE as its ‘South Nicholson Project’.

The work and expenditure program for EL27640 consisted of a detailed geological review of existing data and information towards determining the location of possible diamond mineralisation within the tenement as well as any possible base metal potential. NRE has carried out a detailed geological assessment of the tenures within its South Nicholson Project. NRE’s exploration activities during the first term included considerable research. Research included review and compilation of the data in the Northern Territory Geological Services’ ('NTGS') open file reports, air photo imagery, geochemical samples, geophysical survey data, drilling results and examination of the latest geological maps.

During NRE’s helicopter reconnaissance program over the South Nicholson Project, NRE targeted areas for ground evaluation on the basis of previous geophysical surveys, in particular aeromagnetics and radiometrics. Sites were tested using a scintillometer and by the taking of soil and rock samples. Geological observations and photographs were recorded at each site. NRE carried out extensive soil sampling in respect of EL27640 as well as heavy mineral sampling and a ground magnetic survey within the South Nicholson Project Area. NRE also carried out XRF analysis of water bore cuttings across the South Nicholson Project held at the Darwin Core Library.

On complete review of all desktop and field work conducted over the tenure, an area has now been nominated for relinquishment within EL27640.
1. Introduction

EL27640 was granted to NRE on 20 April 2010, consisting of a total of 187 sub-blocks. The tenure is located within the Mesoproterozoic-Palaeoproterozoic South Nicholson Basin southwest of the Murphy Tectonic ridge. Natural Resources Exploration’s (‘NRE’) rationale and objectives for EL27640, more commonly known by NRE as its ‘Flemington Prospect’, considered the evaluation of potential diamond and base metal mineralisation within the tenement.

NRE also considered the potential for these forms of mineralisation across the broader area of NRE’s South Nicholson Project which EL27640 forms part of.

After complete review of all desktop and field work conducted over the tenure, Figure 1 identifies the location of the relinquished area subject of this report.

Figure 1. Location Map of Relinquished Area

NRE has conducted an extensive review of all previous exploration across the whole of EL27640, completed a reconnaissance helicopter assisted field trip and carried out soil and
rock chip sampling across the tenure. NRE also went on to conduct XRF analysis of water bore cuttings across the tenure, of those water bores held at the Darwin Core Library.

2. History

EL27640 was granted to NRE for six (6) years commencing on 20 April 2010, as the sole titleholder and operator. NRE has recently nominated to relinquish 97 sub-blocks with the remainder of the permit comprising of 90 sub-blocks. Figure 3 below identifies both the retained permit area and the relinquished permit area.

The relinquished sub-blocks subject to this report are as listed in Table 1 below.

<table>
<thead>
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<th>Block</th>
<th>Sub Block</th>
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Both the relinquished areas and retained permit area are located over surface lands that are comprised primarily of Perpetual Pastoral Leases (Figure 4).
Figure 4. *Cadastral Map of Relinquished Area*
3. Geology

3.1 Regional Geology

EL27640 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.

The South Nicholson Basin unconformably overlies rocks of the Lawn Hill Subprovince of the Western Fold Belt Province, across the Queensland-Northern Territory border. 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 isoclinal 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.
The regional geology is shown in Figure 7 below. A general stratigraphic column illustrating the rock relationships across part of the Mt Drummond 1:250,000 geological map is shown in Figure 8.

Figure 5. Regional Geology Map of Relinquished Area
Figure 8. Stratigraphic columns and correlations for rock units on Mt Drummond 1:250,000 sheet in the area of EL27640.
3.2 Permit Geology

The geology within the Flemington prospect is generally poorly outcropping. Proterozoic units outcrop in the north and west of EL27640.

EL27640 is characterized by widespread recent sediment cover with occasional outcrop of the South Nicholson Group sedimentary lithology. In the far north of the tenure, Palaeoproterozoic felsic volcanics of the Benmara Group crop out over a narrow north-easterly trending zone extending approximately 4 kilometres.

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. The permit geology is illustrated in Figure 9 below.

Figure 7. Permit Geology Map of the Relinquished Area
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.

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 grainsize, from pebble conglomerates to finer shales and claystones.

In the Flemington Prospect area there is very little outcrop. Float material has been interpreted as belonging to the Constance Formation sandstones. Aeromagnetic anomalies identified from the government aeromagnetic surveys suggest the presence of basic volcanics or intrusive under cover. The discrete aeromagnetic anomaly suggests the possibility for iron oxide copper gold style deposits or even a diamond pipe. Positive diamond indicator minerals have been found in drainages to the west of the magnetic anomaly.

4. Exploration Objectives and Rationale

The objective of NRE’s exploration program on EL27640 and adjoining tenures was to consider and evaluate the potential for diamond and base metal mineralisation. Investigations were primarily aimed towards locating any outcropping of mineralisation and any indicators of possible subsurface mineralisation across the area.

5. Exploration Activities carried out on the Relinquished Area

NRE’s exploration activities during the term of the permit and in particular, of the relinquished area, consisted of both office-based and field activities. An initial regional assessment of the areas within EL27640 and NRE’s South Nicholson Project for diamond and base metals was conducted during the initial term.

The targets areas were identified based on desktop research of regional geological and geophysical data, augmented with compilation and assessment of all previous exploration results. The aim of work has been to carry out a field assessment of the prospects in order to identify target characteristics and define the next phase of exploration.
An array of material was assessed prior to field work, to assist with optimal target generation. This material included an extensive review of historic exploration conducted over the relinquished area. There has been a number of previous exploration tenements over the subject relinquished area (Figure 10 below). A list of the previous exploration reports in relation to the relinquished area is shown in Table 2 below.

Figure 8. Historical Tenements over the Relinquished Area

Table 2. Historical Reports

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<thead>
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<th>TENURE</th>
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5.1 Water Bore Cuttings Analysis

NRE 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 EL27640. One water bore fell within the relinquished area.

NRE lodged an Exploration Report for these water bore cuttings with the Northern Territory Department of Resources’ Geoscience Division on 7 June, 2011. This report was required in respect of the XRF and ALS Assaying of Water Bore Chips at the Darwin Core Facility. The Exploration Report was titled ‘XRF & ALS Assaying of Water Bore Chips – Core Facility: Darwin’.

6. Reports lodged during the Reporting Period

NRE lodged an Exploration Report with the Northern Territory Department of Resources’ Geoscience Division on 7 June, 2011. This report was required in respect of the XRF and ALS Assaying of Water Bore Chips at the Darwin Core Facility. The Exploration Report was titled ‘XRF & ALS Assaying of Water Bore Chips – Core Facility: Darwin’.

NRE lodged its Year 1 Group Annual Technical Report with the Northern Territory Department of Resources on 26 August 2011, the report of which covered a number of tenures forming NRE’s ‘South Nicholson Project GR175/10’.

NRE also lodged its Year 2 Group Annual Technical Report with the Northern Territory Department of Mines and Energy on 25 September 2012, the report of which covered a number of tenures forming NRE’s ‘South Nicholson Project GR175/10’.

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7. Conclusions

Natural Resources Exploration’s exploration activities during the first and second term of EL27640 have been focused on delineating surface targets within the relinquished area with the aim of identifying any diamond or base metal mineralisation.

NRE has conducted both office-based studies and field operations on EL27640 during the term of this tenure. NRE carried out a detailed geological assessment of the relinquished area which included considerable research prior to a helicopter reconnaissance program evaluating the area. 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.

During NRE’s helicopter reconnaissance program over the South Nicholson Project area, NRE targeted areas for ground evaluation on the basis of previous geophysical surveys, in particular aeromagnetics and radiometrics. Sites were tested using a scintillometer and by the taking of soil and rock samples. Geological observations were also recorded at each site. NRE also carried out XRF analysis of water bore cuttings held at the Darwin Core Library.

After its extensive review of all previous exploration data and its newly acquired data in relation to this ground, NRE has concluded that the potential for mineralisation within the nominated relinquished area is much lower than the remaining tenement area with the remainder of the tenure requiring follow-up work.
8. Bibliography


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