ABSTRACT:

Exploration Licence 28959 formed the Stray Creek Project, a rare earth element (REE) prospect covering 433.2km² straddling the margin between the Wiso Basin and Pine Creek Geosyncline. The exploration target focused on Rare Earth Elements (REE’s) either in primary carbonatitic rocks or in secondary clay horizons derived from erosion of the Pine Creek granites.

A desktop study was conducted over the project area after unconfirmed reports of REE phosphates had been recovered. An open file review didn’t find any reported REE sampling, however it was considered that the ground had potential for possible REE’s given its proximity to Pine Creek granites and its marginal basin setting which had some similarities with fine clay bound xenotime mineralisation found to the west.

No ground investigations were conducted during the 10 month tenure and the ground was surrendered prior to its first anniversary due to a rationalization of projects.
CONTENTS

1. INTRODUCTION

2. TENURE

3. DESCRIPTION OF PROJECT AREA
   3.1 Infrastructure
   3.2 Physiography
   3.3 Geology

4. EXPLORATION
   4.1 Rationale
   4.2 Desktop Study

5. CONCLUSION

6. REFERENCES

7. EXPENDITURE

LIST OF MAPS

MAP 1: TENEMENT LOCATION MAP
MAP 2: GEOLOGY MAP
MAP 3: SATELLITE IMAGE MAP

LIST OF TABLES

TABLE 1: TENURE DETAILS
TABLE 2: HISTORICAL TENEMENT HOLDERS
TABLE 3: REFERENCE DME COMPANY REPORTS
TABLE 4: EXPENDITURE
1. INTRODUCTION

Exploration licence 28959 fell on the margin of the Wiso Basin and Pine Creek Geosyncline and was targeted for potential Rare Earth Element (REE) mineralisation. The licence straddles the Pine Creek and Fergusson River 250k map sheets and the Tipperary, Pine Creek, Jinduckin and Fergusson River 100k map sheets. Access to the Stray Creek project is via the Umbrawarra George road from Pine Creek which ends at Jindare Station, a distance of some 36km from the Stuart Highway. Locally the tenement area can be accessed from station tracks.

The tenement was applied for on 17 August, 2011 and granted on 18th March 2012 and surrendered on the 18th of January 2013.

2. TENURE

Table 1 below contains tenure details for the tenement within the Blue Bush Project. The location of tenement 28958 is shown on Map 1.

<table>
<thead>
<tr>
<th>Tenement</th>
<th>Status</th>
<th>Application Date</th>
<th>Granted Date</th>
<th>Surrendered</th>
<th>Area (km²)</th>
<th>Blocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>EL28959</td>
<td>Granted</td>
<td>17/08/11</td>
<td>19/03/12</td>
<td>18/01/13</td>
<td>408.84</td>
<td>130</td>
</tr>
</tbody>
</table>

Table 1: Tenure Details

3. DESCRIPTION OF PROJECT AREA

3.1 Infrastructure

The Stray Creek Project covered an area of 408.8 km², mainly on Jindare Station and adjoining properties. The project is some 30-60km from Pine Creek and the eastern side is access by the Umbrawarra George Road and the western side by Flemming Road, both sealed roads. Local station tracks provide further access to the Project area.

3.2 Physiography

The physiography of the project area is dominated by a low broad valley associated with the Stray Creek drainage system, much of which is flat lying except the headwaters which rise up to 100m (Limestone Hill at 180m amsl) and gradually slope toward the southwest into the Daly River. The area is dominated by the Daly River Basin which is characterised by colluvium, alluvium and blacksoil plains overlying limestones, siltstones and dolomites. Sink holes are common with limestone scattered outcrop over much of the valley associated with Stray Creek with thick woodlands dominating the lower plains and thinner vegetation and grasslands dominating the intervening areas.

3.3 Geology

The Project area resides on the eastern flank of the Daly River Basin and lies over the older more extensive Wiso Basin. Basement is possible Late Ar-
chaean to Early Proterozoic igneous and high grade metamorphics which are not exposed. Lower Proterozoic shallow marine sandstones, siltstones and limestones overly the basement and have undergone deformation and metamorphism forming the Pine Creek Geosyncline. Mesoproterozoic igneous (granitic) rocks intrude and are unconformably overlain by Upper Proterozoic Tolmer Group sediments. In the Late Proterozoic glacial activity in the west occurred, but of limited extent and is characterised by glaciolacustrine arenites with dropstones. These were eroded before the Lower Cambrian Antrim Plateau Volcanics (Kalkarindijji) continental flood basalts were extruded over the basin and adjoining basins. Unconformably overlying these are the Middle Cambrian to Lower Ordovician limestones which outcrop over much of the licence and represent a period of stable deposition. This was followed by a period of erosion until the lower Cretaceous when a downwarping event gave rise to a marine transgression across northern Australia during the Aptian, where undifferentiated marine and freshwater sedimentation occurred forming the extensive Mullaman beds. Remanet outliers of these are found across the tenement and where eroded during the Tertiary uplift.

The local geology is present in Map 2 and corresponding satellite image in Map 3.

4. **EXPLORATION**

4.1 **Rationale**

The Stray Creek project was generated from an Australian Target exercise for potential REE mineralisation and available ground. A review of the literature and Open file data found unconfirmed reports of REE phosphate minerals and elevated REE occurrences both within the free ground and regional area. In addition, some lineaments were considered as local targets for carbonatitic fluid migration.

4.2 **Desktop Study**

A review of past exploration activities was undertaken initially to check for potential REE targets. Table 2 summaries all past tenement holders. Historical sampling was focused on gold, base metals, diamonds and uranium.

<table>
<thead>
<tr>
<th>Tenement</th>
<th>Explorer</th>
<th>Granted</th>
<th>Ceased</th>
<th>Area km²</th>
<th>%overlap</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP 1682</td>
<td>IMC Development Corporation</td>
<td>10/01/67</td>
<td>9/01/68</td>
<td>3260.3</td>
<td>13.4%</td>
</tr>
<tr>
<td>AP 1693</td>
<td>Continental Oil Company of Australia Ltd</td>
<td>18/01/67</td>
<td>17/01/69</td>
<td>10705.2</td>
<td>83.3%</td>
</tr>
<tr>
<td>AP 2518</td>
<td>CRA Exploration</td>
<td>2/12/69</td>
<td>1/12/70</td>
<td>3660.7</td>
<td>71.2%</td>
</tr>
<tr>
<td>EL 2118</td>
<td>Pancontinental Mining Ltd</td>
<td>23/05/92</td>
<td>12/11/80</td>
<td>260.0</td>
<td>11.6%</td>
</tr>
<tr>
<td>EL 6650</td>
<td>Stockdale Prospecting Ltd</td>
<td>22/06/90</td>
<td>5/01/95</td>
<td>647.1</td>
<td>6.0%</td>
</tr>
<tr>
<td>EL 7673</td>
<td>Stockdale Prospecting Ltd</td>
<td>13/04/92</td>
<td>24/02/94</td>
<td>726.7</td>
<td>41.0%</td>
</tr>
<tr>
<td>EL 7796</td>
<td>Stockdale Prospecting Ltd</td>
<td>4/12/92</td>
<td>30/11/94</td>
<td>1002.5</td>
<td>44.4%</td>
</tr>
<tr>
<td>EL 8651</td>
<td>Homestake Gold of Australia Ltd</td>
<td>3/02/95</td>
<td>15/08/95</td>
<td>249.8</td>
<td>4.5%</td>
</tr>
<tr>
<td>EL 8648</td>
<td>Homestake Gold of Australia Ltd</td>
<td>20/05/96</td>
<td>4/12/97</td>
<td>152.0</td>
<td>17.0%</td>
</tr>
<tr>
<td>EL 25299</td>
<td>Sipa Exploration NL</td>
<td>12/12/07</td>
<td>25/03/09</td>
<td>808.5</td>
<td>30.6%</td>
</tr>
</tbody>
</table>
Table 2: Historical Tenement Holders (source NTGS) and the approximate percentage overlap with EL28959

4.2.1 IMC Development Corporation (1967 - 1968)

IMC undertook exploration for phosphate deposits, targeting the Cambrian and Ordovician limestone’s based on the historical BMR report of up to 8% \(P_2O_5\) in a Katherine borehole. None of the samples collected from The Tindall limestone, Manbullo limestone, Jinduckin Formation or Ooloo limestone caprock were anomalous in phosphate or reported high radiometric counts.

4.2.2 Continental Oil Company of Australia Ltd (1967- 1969)

Continental also undertook exploration for phosphates in the Daly River Basin using available borehole cuttings. They found that only the Tindall and Ooloo Limestones had above background values of phosphate with the Ooloo limestone being more irregular in phosphate content while the Tindall being more consistent. However, they found little encouragement for continued exploration. The highest result was 3%\(P_2O_5\) from Stray Creek sample.

4.2.3 CRA Exploration (1969 - 1970)

CRAE focused on uranium mineralisation, but also looked at phosphate in the Jinduckin formation (best 2.5%) and base metals in Stray Creek. They mapped out the extent of the Jinduckin Formation and its various lithologies and found little porosity development for hosting mineralisation. At Stray Creek they collected 17 stream, 5 soil and 3 chip samples and found low levels of Pb, Zn, Cu, Co, Ni, Ag and U. They also reported that some 18t of alluvial tin has been mined from small pockets in Stray Creek. On the Cullen Granite they investigated several radiometric hotspots, but only found low levels of U.

4.2.4 Pancontinental Mining Ltd (1979-1980)

Pancon targeted limestone for lime by collecting 120 rock samples for \(CaCO_3\) and \(MgCO_3\) analysis and 3 soil samples for \(SiO_2\), \(Al_2O_3\), \(CaO\), \(MgO\), \(Na_2O\) and \(K_2O\) analysis. They found 20% of the samples had \(CaCO_3/MgCO_3\) ratio’s >10 and ground inspection found Stray Creek unsuitable for exploitation, whereas parts of Limestone Hill and their Fence Line Grid had acceptable quality. However they appear to have walked away from further investigations.

4.2.5 Stockdale Prospecting Limited (1990-1994)

Stockdale (SPL) focus was on diamond exploration but had a JV with Tipperary Mining Ltd in the north on EL28959 and collected geochemical samples for gold and base metals. SPL undertook a heavy mineral stream sampling programme over all defined drainages and supplemented this with airborne geophysical survey at 200m (and 400m infill on NTGS data) North-South lines with 60m sensor height. Only one magnetic anomaly was identified for follow-up in EL28959 and this was attributed to a possible sink
hole. The Heavy mineral sampling recovered one fine diamond and a
background of chromites, possible released from Lamprophyric dykes in the
east or reworked from Cretaceous Mullaman Beds, a known secondary
source of heavy minerals. The diamond was followed up but not diamond
indicators were recovered.

4.2.6 Homestake Gold of Australia (1995-1997)

Homestake targeted gold in the Stray Creek area based on geophysical
anomalies and lineaments, (in the case of EL9648 a large NW-SE striking
elongate magnetic feature) and the areas proximity to the Cullen Batholith.
The target source was considered to be under Palaeozoic and Cainozoic
cover, however after a literature review and interpretation of the geophysical
data, the cover was considered too thick for economic Proterozoic gold
mineralisation. In addition access negotiations with the Native Title process
impeded ground exploration from occurring.

4.2.7 Sipa Exploration NL (2007-2009)

Sipa entered an option and farm in agreement with the tenement holder, a
David Zohar. The overlapping licence was part of a contiguous set of ELA’s,
mainly targeting uranium as part of a radiometric corridor. The agreement fell
away after a brief site visit with the traditional owners, no exploration was
conducted.

5. Conclusion

Exploration in tenement was focused the REE potential for the area on the
margin of the Pine Creek Geosyncline and the opposite side of the Wiso
Basin to TUC’s clay bound REE occurrences. This area was thought to host
some potential, especially after unconfirmed REE phosphate was reported
and its marginal basin setting with possible analogies to other known REE in
the region. A desk top study of the historical exploration activity was
conducted and correlated with all published geological, geophysical and
remote sensing data. Unfortunately the target was not ground truthed, due to
Kinloch rationalising its exploration portfolio.

6. References

References are summarised in Table 3 with the Company report numbers
(CR) for each historical report covering EL28959.

<table>
<thead>
<tr>
<th>Tenement</th>
<th>Explorer</th>
<th>Company Report - NTGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP 1682</td>
<td>IMC Development Corporation</td>
<td>CR1967-0020</td>
</tr>
</tbody>
</table>
7. EXPENDITURE

Expenditure for the period of tenure involved mainly geological investigations, tenement management and report writing, see Table 4

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries &amp; Wages</td>
<td>$5,280</td>
</tr>
<tr>
<td>Rent</td>
<td>$4,030</td>
</tr>
<tr>
<td>Administration</td>
<td>$1,056</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$10,366</strong></td>
</tr>
</tbody>
</table>

*Table 4: Expenditure for EL28959*

Mark Mitchell
Geologist