<table>
<thead>
<tr>
<th>Title Holder</th>
<th>Vale Australia EA Pty Ltd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operator</td>
<td>Vale Exploration Pty Ltd</td>
</tr>
<tr>
<td>Titles</td>
<td>Exploration Licence 27196</td>
</tr>
<tr>
<td>Project Name</td>
<td>Soudan</td>
</tr>
<tr>
<td>Report Title</td>
<td>Exploration Licence 27196, Soudan, Third Annual and Final Report for period 26 October 2009 to 2 November 2012</td>
</tr>
<tr>
<td>Personal Author</td>
<td>Ricardo, Miguel</td>
</tr>
<tr>
<td>Corporate Author</td>
<td>Vale Exploration Pty Ltd</td>
</tr>
<tr>
<td>Commodity</td>
<td>Phosphate</td>
</tr>
<tr>
<td>Date of Report</td>
<td>24 November 2012</td>
</tr>
<tr>
<td>250 000 K map sheet</td>
<td>Avon Downs, Ranken</td>
</tr>
<tr>
<td>100 000 K map sheet</td>
<td>Barry Caves, Ranken</td>
</tr>
<tr>
<td>Contact details</td>
<td>Vale Exploration Pty Ltd</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Fax</td>
<td>07 3136 0510</td>
</tr>
<tr>
<td>Phone</td>
<td>07 3136 0957</td>
</tr>
<tr>
<td>Email for technical</td>
<td><a href="mailto:miguel.ricardo@valeaustralia.com.au">miguel.ricardo@valeaustralia.com.au</a></td>
</tr>
<tr>
<td>Email for expenditure</td>
<td><a href="mailto:lynne.odonnell@valeaustralia.com.au">lynne.odonnell@valeaustralia.com.au</a></td>
</tr>
</tbody>
</table>
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APPENDIX 3 Regional 3D Inversion Modelling of Gravity and Magnetic Data for Georgina Project - MIRA Geoscience, May 2011
**Executive Summary**

This is the third annual and final report for Soudan Project EL 27196 for the period 26 October 2009 to 31 October 2012. The Soudan Project, located approximately 260 km ESE of Tennant Creek, is a sub-project of Vale’s Georgina Phosphate Exploration Project and covers Cambrian sediments of the Georgina Basin. The sediments of the Georgina Basin range in age from late Proterozoic to early Palaeozoic. The Wonarah Formation outcrops on the western half of EL27196 and the Camooweal Dolostone has been mapped outcropping in the south-eastern corner. The middle section between these two outcrops is concealed beneath Cainozoic sediments and the north eastern quarter of the tenement is concealed beneath Cenozoic sediments. No phosphate exploration work was conducted on EL27196 in 2012. Geophysical basin modelling, drill hole data, distance from the Adelaide-Darwin railway, shelf morphology and “Vale size” phosphate ore body geometries were considered and the decision made to surrender Soudan EL27196.


1 Introduction

1.1 Location and Access

The Soudan Project is comprised of a single tenement located approximately 260 km ESE of Tennant Creek (see Figure 1: Soudan Tenement Location Plan) on the Avon Downs (SF53-04) and Ranken (SE53-16) 1:250,000 and the Barry Caves 6257 and Ranken 6258 1:100,000 map sheets. The project straddles parts of West Ranken (NT Portion 2, PPL914) and Soudan (NT Por 4, PPL916) stations and also covers a small area of freehold land (NT Portion 614, held by the NT Land Corporation). The nearest homestead, Soudan, is approximately 2km east of the project area. The Wunara community is located approximately 2 km west of the northwest corner of the tenement.

Access to the Soudan Project is via the sealed Barkly Highway which transects the lease in an east-west direction.

1.2 Tenement Details

The Soudan Project is comprised of a single tenement, EL27196 held by Vale Australia EA Pty Ltd and operated by Vale Exploration Pty Ltd under Authorization 0556-01.

An application to waive the Year 2 50% relinquishment due 25 October 2011 was approved by the Department on 17 October 2011.

Table 1: Soudan Project Tenement Details

<table>
<thead>
<tr>
<th>Tenement Number</th>
<th>Holder</th>
<th>Area (Blocks)</th>
<th>Date of Grant</th>
<th>Surrendered</th>
</tr>
</thead>
<tbody>
<tr>
<td>EL27196</td>
<td>Vale Australia EA Pty Ltd</td>
<td>242</td>
<td>26/10/2009</td>
<td>31/10/2012</td>
</tr>
</tbody>
</table>

A security of $1000 is being held (under the Mining Act), by NT DoR to cover Crown Lease in Perpetuity 746 – NT Por 614.

1.3 Native Title

There are two registered Native title claims over the Soudan Project:

- Burramurra DC02/15 is registered (overlaps the southeastern quarter of EL27196);
- Dalmore Downs DC01/30 (overlaps the remaining three quarters of the tenement).

Vale is required to consult Native Title parties in accordance with Section 24A of the Mining Act which requires that (in the absence of a separate agreement) prior to the commencement of exploration activities (other than reconnaissance), Vale convene a meeting on the Project area (or the nearest convenient locality) with registered Native Title claimants or holders to explain the exploration activities. Vale met with the NLC and Traditional Owners on 24 August 2010.
Figure 1: Soudan Tenement Location Plan
1.4 Historical, Aboriginal, Heritage Sites

No sites of historical significance are listed on the Australian Heritage database.

An inspection of the Aboriginal Areas Protection Authority (AAPA) Register was conducted in the previous reporting period. This inspection identified up to eight sacred sites within the project (see Table 2).

Table 2: AAPA - Aboriginal Cultural / Sacred Sites¹ within each tenement

<table>
<thead>
<tr>
<th>Tenement</th>
<th>Sites Present</th>
</tr>
</thead>
</table>
| EL27196  | • 4 x Recorded Site Centroids,  
          | • 3 x Registered Site Centroids,  
          | • 1 x Restricted works area |

An application for an AAPA certificate was lodged on 7 May 2010. The AAPA responded that it was a non-standard request and provided a quote for this work which was accepted by Vale on 3 June 2010. The AAPA Certificate issued 24 November 2010 and outlined 5 Restricted Work Areas.

1.5 Climate and Hydrology

The Soudan region is semi-arid with annual rainfall of 415.4mm². The climate is characterized by distinct wet and dry seasons with the majority of rain falling between November and March. The predominant wind direction is from the east.

Table 3: Climate Statistics – Brunette Downs (BOM 2010)

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>Aug</th>
<th>Sept</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Maximum Temperature °C</td>
<td>37.0</td>
<td>36.3</td>
<td>35.2</td>
<td>33.6</td>
<td>29.9</td>
<td>26.8</td>
<td>26.7</td>
<td>29.6</td>
<td>33.4</td>
<td>36.7</td>
<td>38.0</td>
<td>38.5</td>
</tr>
<tr>
<td>Highest Temperature °C</td>
<td>44.3</td>
<td>45.5</td>
<td>42.5</td>
<td>39.1</td>
<td>38.1</td>
<td>34.7</td>
<td>36.0</td>
<td>37.4</td>
<td>40.3</td>
<td>44.2</td>
<td>44.3</td>
<td>45.5</td>
</tr>
<tr>
<td>Mean days ≥ 40 °C</td>
<td>6.8</td>
<td>4.5</td>
<td>1.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.1</td>
<td>3.5</td>
<td>8.7</td>
<td>10.6</td>
</tr>
<tr>
<td>Mean Minimum Temperature °C</td>
<td>24.5</td>
<td>24.2</td>
<td>22.3</td>
<td>19.2</td>
<td>15.1</td>
<td>11.4</td>
<td>10.6</td>
<td>12.5</td>
<td>16.6</td>
<td>20.6</td>
<td>23.0</td>
<td>24.4</td>
</tr>
<tr>
<td>Lowest Temperature °C</td>
<td>16.5</td>
<td>16.1</td>
<td>11.4</td>
<td>8.7</td>
<td>4.0</td>
<td>1.7</td>
<td>1.4</td>
<td>1.7</td>
<td>5.0</td>
<td>7.5</td>
<td>13.2</td>
<td>15.0</td>
</tr>
<tr>
<td>Mean Rainfall (mm)</td>
<td>106.2</td>
<td>100.1</td>
<td>54.2</td>
<td>14.8</td>
<td>8.1</td>
<td>7.1</td>
<td>4.5</td>
<td>1.4</td>
<td>6.0</td>
<td>15.3</td>
<td>28.8</td>
<td>67.1</td>
</tr>
<tr>
<td>Mean number of days of rain</td>
<td>8.2</td>
<td>8.2</td>
<td>4.8</td>
<td>1.6</td>
<td>1.0</td>
<td>0.7</td>
<td>0.6</td>
<td>0.3</td>
<td>0.8</td>
<td>2.0</td>
<td>3.7</td>
<td>6.1</td>
</tr>
</tbody>
</table>

¹ Sites identified in AAPA Register Inspection
² Rainfall measurements from 1891 - 2010 (i.e. 120 years data)
1.6 Land Area Type

The Soudan project covers Cambrian sediments of the Georgina Basin. The project straddles the Davenport Murchison Ranges (DMR) bioregion, the Mitchell Grass Downs (MGD) bioregion and the Tanami (TAN) bioregion. These bioregions are further described below.

DMR: Comprises low but rugged rocky hills formed from folded volcanics, sandstone, siltstone and conglomerates. Soils are generally shallow lithosols, but fine grained alluvial soils occur in the valleys and surrounding plains. Vegetation includes hummock grasslands and low open woodlands dominated by eucalypt and Acacia species (Baker et al., 2005).

MGD: Lies over the Georgina and Dunmurra basins containing sedimentary rocks of Cretaceous, Tertiary and Cambrian ages and soils are predominantly cracking clays. The vegetation is predominantly Eucalyptus microtheca low open-woodland with Bluebush (Chenopodium auricomum) sparse-shrubland understory, and Mitchell Grass (Astrebla) grassland on the Barkly tableland.

TAN: Red Quaternary sand plains supporting mixed shrub steppes of Hakea suberea, desert bloodwoods, acacias and grevilleas over Triodia pungens hummock grasslands.

Physiography

The Soudan Project comprises of one physiographic unit.

‘Downs country, with swamps and lakes’ occurs on the Soudan Project. The downs country is lower than nearby areas of sand plain and the ranges, and generally slopes to the east away from the Ashburton Ranges. It is largely covered by black soils supporting Mitchell and Flinders grass.

1.6.1 Flora

The Flora data was documented in the previous reporting period and is included here for reference purposes. The dominant vegetation community within the project area is Corymbia low open woodland. Small areas of Acacia tall open shrubland, Astrebla (Mitchell grass) low tussock grassland and Triodia low open hummock grassland also occur within the project, with (see Figure 2: Vegetation Plan).

Introduced flora (weed) species that may occur in the Barkly region, possibly within the Soudan project area include:

Table 4: Introduced Flora (Weeds) that may occur within Soudan Project

<table>
<thead>
<tr>
<th>Species Name</th>
<th>Generic Name</th>
<th>Where</th>
<th>Type of Presence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acacia nilotica</td>
<td>Prickly acacia</td>
<td>Barkly Highway</td>
<td>Occurrences</td>
</tr>
<tr>
<td>Parkinsonia aculeata</td>
<td>Parkinsonia</td>
<td>Lake Sylvester (further north)</td>
<td>Infestation</td>
</tr>
<tr>
<td>Prosopis sp</td>
<td>Mesquite</td>
<td></td>
<td>Possible</td>
</tr>
</tbody>
</table>

3 Figure 2 Produced with Digital Vegetation Mapping data purchased from NRETAS October 2009.
Figure 2: Soudan Project – Vegetation Plan
1.6.2 Fauna

The Flora data was documented in the previous reporting period and is included here for reference purposes.

A search of NRETAS\(^4\) data found that no fauna species covered by the *EPBC Act 1999*\(^5\) have been documented within the Soudan Project.

The Australia Bustard (*Ardeotis Australis*) has been recorded, outside, to the east and west of Soudan Project tenement EL27196 (see Figure 3: Soudan Project – Fauna Plan). This species is not considered to be vulnerable, endangered or critically endangered under the *EPBC Act*, however it is considered vulnerable by the NT Government and is protected by the *Territory Parks and Wildlife Conservation Act 2009*.

A search of the Australian Government Department of the environment, water, heritage and the arts website, ‘protected Matters Search tool’ identified 1 threatened species and 7 migratory bird species (one of which is threatened) within a rectangular search area encompassing the tenements. These species may also occur within the tenements, however birds listed as migratory or marine are most likely to be located the vicinity of the Ranken River, which crosses through the north-eastern corner of EL27196.

<table>
<thead>
<tr>
<th>Birds</th>
<th>Species Name</th>
<th>Generic Name</th>
<th>Status</th>
<th>Type of Presence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rostratula austalis</td>
<td>Australian Painted Snipe</td>
<td>Vulnerable</td>
<td>Species or species habitat may occur within the area</td>
<td></td>
</tr>
</tbody>
</table>

\(^4\) NRETAS - NT Department of Natural Resources, Environment, the Arts and Sport

\(^5\) Environmental Protection and Biodiversity Conservation Act 1999
Figure 3: Soudan Project – Fauna Plan
2 Geology

The Soudan Project covers Cambrian sediments of the Georgina Basin (Figure 4: Schematic west to east stratigraphic transect across Wiso and Georgina basins & Figure 5: Soudan Project – Geology). The sediments of the Georgina Basin range in age from late Proterozoic to early Palaeozoic. To the north they overlie mid-Proterozoic sediments of the South Nicholson and McArthur Basins, to the east they unconformably overlie mid-Proterozoic rocks of the Cloncurry-Mt Isa Block. On the southern margin of the basin, basin sediments overly sediments of the Arunta Block, whilst to the west they unconformably overly basement composed of rocks of the early Proterozoic Hatches Creek and Warramunga Groups and their equivalents (Cook, P, 1986).

The Georgina Basin sediments show complex facies relationships and no single stratigraphic column can be provided for the Georgina Basin (Smith, 1972; Cook 1986). The following simple schematic section (Figure 4) can be used as a broad guide to stratigraphic units containing known phosphorite. It should be noted that although Rio Tinto geologists who worked on the Wonarah project considered that the Wonarah deposit occurred within the Gum Ridge Formation (Lilley, 2002) the Wonarah deposit is identified here as occurring in the Wonarah Formation, as others consider that the phosphorite interval on the Alexandria-Wonarah basement high is more likely to be the basal Wonarah Formation (Kruse et al., 2010).

![Figure 4: Schematic west to east stratigraphic transect across Wiso and Georgina basins](image-url)
Major phosphate deposition occurred in the Middle Cambrian (Templetonian), an interval which corresponds to a large scale rise in sea level and represents the time of maximum phosphate deposition with up to 100m of siltstones fine sandstones, cherts and phosphorites being deposited around the eastern margins of the basin and adjacent to the Alexandria-Wonarah high (Cook, 1986).

3  Local Geology

The Soudan Project occurs on the Avon Downs (SF53-04) and Ranken (SE53-16) 1:250,000 and the Barry Caves 6257 and Ranken 6258 1:100,000 map sheets.

The following is a summary of observations based on the 1:250,000 Alroy map sheet:

The Wonarah Formation outcrops on the western half of EL27196. The Camooweal Dolostone has been mapped outcropping in the south-eastern corner of the tenement. The middle section of the tenement between these two outcrops is concealed beneath Cainozoic sediments.

The geology of the north eastern quarter of the tenement is also concealed beneath Cenozoic sediments, namely grey-black clay rich soil plains.

In addition to geological mapping, there is one existing diamond drill hole within the Soudan project (RNN0001). The geological log indicates that the hole intersected fossiliferous limestone (interpreted by this author to be Wonarah Formation).
Figure 5: Soudan Project – Geology
4 Previous Exploration

An open file literature review was completed during the previous reporting period and is included in this report for reference only.

The Soudan area has been explored by six previous companies; for phosphate and base metals in the 1960s and more recently for diamonds in the 1980s, 1990s and 2000s.

Eight exploration drill holes are known to occur within the tenement. These include one diamond drill hole (RNN001), two aircore holes (RNN002, RNN006) and five drill holes that are unspecified (W1, W38, S-1-70, S-2-70, S-3-70).

W1, drilled to a depth of 115 feet (~38m) returned no significant P₂O₅ assays. W38 near the NW corner of the tenement intersected 2.5m @ 2.2% P₂O₅ from 23.3m.

Holes RNN001, RNN002 and RNN003 targeted magnetic anomalies (diamond exploration) and were not assayed, however RNN001, which intersected Wonarah Formation limestone is available for sampling in the NT Department of Resources core yard in Winnellie.

A summary of historic tenements and open file reports covering the Soudan Project is listed in Table 6, below. A summary of previous exploration works on the Soudan Project is included as Table 7, below. This table collates historic exploration as outlined in open file mineral exploration reports.

Table 6: Historic Tenements and Reports Covering Soudan Applications

<table>
<thead>
<tr>
<th>Tenement</th>
<th>Granted</th>
<th>Ceased</th>
<th>Company</th>
<th>Number of Reports</th>
<th>Open File Report Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP1802</td>
<td>19670814</td>
<td>19680813</td>
<td>IMC Development Corporation</td>
<td>1</td>
<td>CR1968-0030</td>
</tr>
<tr>
<td>AP1875</td>
<td>19671229</td>
<td>19701228</td>
<td>Pickands Mather &amp; Co. International</td>
<td>1</td>
<td>CR1970-0080</td>
</tr>
<tr>
<td>EL4591</td>
<td>19840903</td>
<td>19900902</td>
<td>CRA Exploration Pty Ltd</td>
<td>2</td>
<td>(immediate east) CR1985-0275, CR1986-0256</td>
</tr>
<tr>
<td>EL7147</td>
<td>19920421</td>
<td>19921218</td>
<td>CRA Exploration Pty Ltd</td>
<td>1</td>
<td>CR1993-0218</td>
</tr>
<tr>
<td>EL22596</td>
<td>20010830</td>
<td>20021030</td>
<td>Rio Tinto Exploration Pty Ltd</td>
<td>1</td>
<td>CR2002-0243</td>
</tr>
<tr>
<td>EL22980</td>
<td>20020918</td>
<td>20040223</td>
<td>De Beers Australia Exploration Ltd</td>
<td>2</td>
<td>CR2003-0424, CR2004-0188</td>
</tr>
<tr>
<td>EL23269</td>
<td>20030428</td>
<td>20040204</td>
<td>Elkedra Diamonds NL</td>
<td>1</td>
<td>CR2004-0195</td>
</tr>
</tbody>
</table>
### Table 7: Previous Exploration on Soudan

<table>
<thead>
<tr>
<th>Dates</th>
<th>Company</th>
<th>Commodity</th>
<th>Tenement Numbers</th>
<th>Item Number</th>
<th>Work Completed</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>14/08/1967 – 13/08/1968 IIMC Development Corporation</td>
<td>Phosphate</td>
<td>AP1802</td>
<td>CR1968-0030</td>
<td>Photo Interp, Mapping, Geomagnetism, Gravity Interp</td>
<td>Mapping indicates Wonarah beds within AP1802 extend into the northern part of the Soudan application, however this map ends at the boundary of AP1802 (doesn't show geology further south within the Soudan application). 28 holes for 3374 feet. Hole W1 within Soudan application.</td>
<td>3 holes for 330 feet [S-1-70 to S-3-70] to follow up IMC’s reported P2O5 intersection in IMC No. 1. NSA’s returned from drilling. Samples Shapiro tested. Best result approx 1% P2O5.</td>
</tr>
<tr>
<td>12/12/1969-11/12/1970 IIMC Development Corporation</td>
<td>Base Metals</td>
<td>AP2161</td>
<td>CR1970-0036</td>
<td>Assays only</td>
<td>Library cuttings from 51 holes drilled @ Wonarah were assayed for Cu, Co, Ni, Pb, Zn. This report contains base metal assays.</td>
<td></td>
</tr>
<tr>
<td>- 26/07/1986 CRA Exploration Pty Ltd</td>
<td>Diamonds</td>
<td>EL4591</td>
<td>CR1986-0256</td>
<td>Geophysics, Recon Airborne Survey, Heli Mags, Ground Mags, Mag Interp, Drilling, Geochemistry, Drainage sampling, Soil sampling, Diamond drilling.</td>
<td>Detailed low level aeromag survey was flown over EL4591 &amp; the Sthn half of EL4592. Anomalous areas Hemigad and anomalies were traversed with ground mags. 28 features were loam sampled. Photointerp: 35 anomalous geomorph features; 21 of these were ground truthed and 10 were loam sampled.</td>
<td></td>
</tr>
<tr>
<td>3rd September 1984 – 2nd August 1985 CRA Exploration Pty Ltd</td>
<td>Diamonds</td>
<td>EL4591, EL4592, EL4596, EL4597, EL4598, EL4599</td>
<td>CR1985-0275</td>
<td>Geophysics, Recon Airborne Survey, Heli Mags, Ground Mags, Mag Interp, Radiometrics, Geochemistry, Drainage sampling, Soil sampling,</td>
<td>Detailed low level aeromag survey was flown. Anomalous areas Hemigad and anomalies were traversed with ground mags. 122 features were loam sampled – 24 within EL4591. 35 x -2mm loam samples and -60 mesh soil samples were collected from the EL areas. -80 mesh samples were submitted for multi element assays.</td>
<td>35 x -2mm loam samples and -60 mesh soil samples were collected from the EL areas. -80 mesh samples were submitted for multi element assays. Highest U assay 4ppm. 3 samples 1311058R, 1311070R and 1311079R assayed for P2O5 with assays between 0.04 and 0.06%.</td>
</tr>
<tr>
<td>21st April 1992 - 18th December 1993 CRA Exploration Pty Ltd</td>
<td>Diamonds</td>
<td>(Note cites P2O5 whole rock analysis)</td>
<td>EL7147</td>
<td>Geophysics, Recon Airborne Survey, Heli Mags, Ground Mags,</td>
<td>Five rotary percussion holes for 202m [PD92J1-PD92J9] were drilled to test mag anomalies. These drill holes all occur to the west of the Soudan application. Whole rock analysis of thin (&lt;3m) claystone unit intersected in drill hole.</td>
<td></td>
</tr>
<tr>
<td>Dates</td>
<td>Company</td>
<td>Commodity</td>
<td>Tenement Numbers</td>
<td>Item Number</td>
<td>Work Completed</td>
<td>Comments</td>
</tr>
<tr>
<td>------------------------</td>
<td>----------------------------------</td>
<td>-----------</td>
<td>------------------</td>
<td>-------------</td>
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<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
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<tr>
<td>18th Sept 2002 – 18th Feb 2004.</td>
<td>De Beers Australia Exploration Ltd</td>
<td>Diamonds</td>
<td>EL22980</td>
<td>CR2004-0188, CR2003-0424</td>
<td>Petrology Geochemistry Rock Chips Soil Samples</td>
<td>Reconnaissance, considered favourable for Wonarah style deposits, but downgraded with Wonarah. Three mag anomalies were drill tested using a multipurpose aircore/diamond rig. Two anomalies were explained by a magnetic sub-surface alluvial gravel layer. The third was unexplained. 3 holes drilled for 189m. No record of any assays having been done. Logs indicate all three holes ended in Cambrian sediments. RNN001, the deepest hole, which was drilled to a depth of 116m is available for sampling at NTGS's Darwin facility.</td>
</tr>
<tr>
<td>28/04/2003</td>
<td>Elkeda Diamonds NL</td>
<td>Diamonds</td>
<td>EL23269</td>
<td>CR2004-0195</td>
<td>Aero magnetic interp. Geophysical surveys, Aeromag surveys, Diamond Drilling.</td>
<td>Reprocessing and interp of NTGS Barkly Area 2 aeromag survey. No anomalies identified and the area was surrendered.</td>
</tr>
</tbody>
</table>
5 Exploration Previous Reporting Periods

Vale’s previous exploration activity on Soudan is summarized below.

2010 Exploration Season

- Inspection of AAPA Register and consultation meeting with Traditional Owners.
- Open file literature review; compilation and review of publicly available geological maps and geophysical data.
- Vale commissioned CSIRO to undertake XRF analysis of 39 water bore chip samples from 1 historic water bore hole within Soudan. The report and data were submitted to the Department in Dec-09.
- (4) Rock grab samples; assay results reported.

2011 Exploration Season

- Field reconnaissance.
- Rock-chip sampling (45 samples); assay results reported.
- Geophysical Basin Modelling completed by MIRA Geoscience to assist with phosphate targeting by generating detailed images of depthbasement, gravity and magnetics.
- Line and drill pad clearing - 6.5 line km tracks (1.95 ha); 4 pads and 4 sumps (0.32 ha).
- RC Drilling (4 holes 056-059) for 455m and 240 composite samples).
- Total disturbance of 2.27 ha rehabilitated.
- Drill assay results were not available in the last reporting period and are provided here at Appendix 1.
- Refer Figures 6 and 7 for 2011 sampling and drilling locations.
Figure 6: 2011 Rock Chip Sample Locations (Scale 1:200 000)
6 Exploration completed during current reporting period

The distance from the Adelaide-Darwin railway (refer Appendix 2), the MIRA Geoscience basement model (Appendix 3), and very little to no high P2O5 drill assays from 2011 (Appendix 1), all led to the decision for no exploration on Soudan in 2012.

7 Rehabilitation Status

The Soudan Project has been the subject of very limited historic exploration, most of which is believed to have been rehabilitated.

Vale did not require all the requested track clearing component (10 km) of the Soudan MMP due to hole placement and a reduction in drill-hole program from 10 holes to 4 holes. Vale formed 6.5 line km (1.95 ha) of access track approximately 3 m wide and 4 drill pads on which 4 small sumps were excavated (total pad area – 0.32 ha, individual pad size: approximately 20m x 40m).

The requested 50 x 25 m area as described in the MMP in the case of a larger rig being made available from the drilling contractors did not eventuate and as a smaller drill rig setup was used, a smaller drill pad size was cleared in the 2011 field season.

The total ground disturbance for the Soudan Project for 2011 field season was approximately 2.27 ha.

Rehabilitation of drill pads, sumps, drill collars and access was completed soon after drilling.

Drill holes were plugged after each hole was drilled and sumps filled. Access tracks were ripped and topsoil respread at the end of exploration activities.

Revegetation involved scarifying compacted surfaces and respreading topsoil (and its contained seedbank) over disturbed surfaces. Any vegetation stockpiled during clearing processes was then spread/placed on top of the topsoil to germinate naturally.

8 Conclusions

Modelling and interpretation from the geophysical study commissioned over Vale’s Georgina Phosphate Exploration Project, previous drill hole data, distance from the Adelaide-Darwin railway, shelf morphology and “Vale size” phosphate ore body geometries were all used when considering the exploration potential for Soudan. The distance from the Adelaide-Darwin railway is a crucial factor when considering the advancement of phosphate potential on this tenement.

As a result, the decision was made to surrender the Soudan EL27196.
9 References

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