

18 December 2012

## **SHIYELA IRON PROJECT 46% TONNAGE INCREASE IN JORC RESOURCE**

### **KEY POINTS**

- The December 2011 Inferred Mineral Resource for the Shiyela Iron Project has been increased by 36.4 Mt to 115.1 Mt at an enhanced grade of 19.5% Fe.
- The magnetite-dominant M62 deposit, capable of producing a 68% Fe product, has an Indicated and Inferred Resource of 44.7 Mt at 17.3% Fe and overall weight recovery of 16.37%.
- A satellite deposit to M62, known as M62R, has an Inferred Resource of 9.3 Mt at 16.3% Fe with an overall weight recovery of 17.4%.
- The mixed magnetite-hematite M63 deposit, capable of producing a 63.8% Fe product, has an Indicated and Inferred Resource of 61.2 Mt at 21.6% Fe with an overall weight recovery of 28.9%.
- Metallurgical testwork by Mintrex Pty Ltd has enabled a more cost effective plant design which will recover both magnetite and hematite fractions.
- The resource estimate was completed by Golder Associates Pty Ltd (Perth).

Deep Yellow Limited (DYL or the Company) is pleased to announce that Golder Associates Pty Ltd (Golder) has updated the JORC Mineral Resource estimate for its Shiyela Iron Project (the Project) in Namibia. The Project, which is held by Shiyela Iron (Pty) Ltd (Shiyela Iron), a 95% owned subsidiary of DYL and DYL's Namibian empowerment partner, Oponona Investments (Pty) Ltd (5%), is located entirely within EPL 3496 which is held by DYL's wholly-owned Namibian subsidiary, Reptile Uranium Namibia (Pty) Ltd (RUN) (see Figure 1). (Shiyela Iron was recently provided with a Notice of Preparedness to Grant a Mining Licence (MLA176) by the Ministry of Mines and Energy of the Republic of Namibia.)

The resource update is based on results obtained from a PQ core drilling campaign completed earlier this year and additional metallurgical testwork; Davis Tube Recovery (DTR) and Davis Tube Concentrate (DTC) assays on the magnetite domain samples and Fusion X-ray Fluorescence (XRF) assays on hematite domain samples. As a result, almost 80% of the M62 magnetite deposit has been upgraded to Indicated Resources, whilst for M63 approximately 10% of the mineralisation has been classified as Indicated Resources. A summary of the Mineral Resources is shown in Table 1 and the full resource statements are included as Appendix 1.

The additional testwork provided the information required for an improved flowsheet design that will allow the recovery of both magnetite and hematite. The magnetite is recovered to a product grade of 68% Fe



and the hematite to a grade of 61% Fe. It is expected that up to 85% of the contained Fe will be recovered.

DYL's Managing Director, Greg Cochran, expressed his satisfaction at the resource upgrade, commenting "we have now advanced our understanding of the Shiyela Iron Project through this comprehensive drill and metallurgical testwork campaign. We are a lot closer to our initial expectations and firmly believe that the Project can now, under the right circumstances, be taken to the next step in its development."

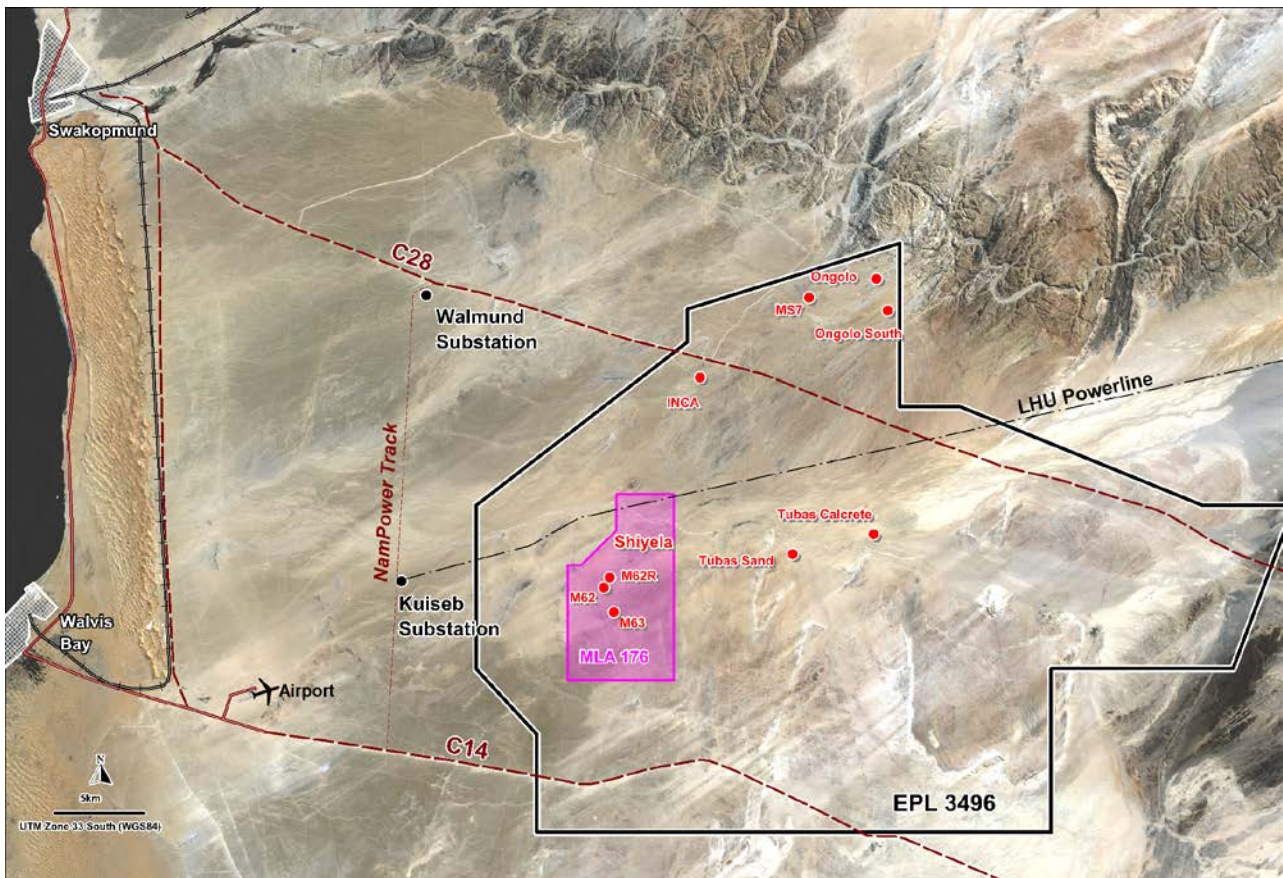


Figure 1: MLA 176 Plan showing the location of the M62, M62R and M63 deposits



Figure 2: Diamond Drilling for Testwork Core M63 Deposit

**Table 1: Summary JORC Mineral Resource Estimate Shiyela Iron Project - December 2012**

Deposit	Category	Cut-off Grade	Tonnes (M)	Fe (%)	DTR (%)
M62 – Magnetite	Indicated	10 wt% DTR	35.2	-	17.62
	Inferred	10 wt% DTR	9.4	-	15.75
	<b>Total</b>		<b>44.7</b>	<b>17.33</b>	<b>16.37</b>
M62R – Magnetite	Inferred	10 wt% DTR	9.3	16.30	17.40
	<b>Total</b>		<b>9.3</b>	<b>16.30</b>	<b>17.40</b>
M63 – Magnetite	Indicated	10% Fe	5.3	22.32	15.78
	Inferred	10% Fe	29.2	20.80	15.21
	<b>Total</b>		<b>34.5</b>	<b>-</b>	<b>15.30</b>
M63 – Hematite	Inferred	10% Fe	26.7	22.29	-
	<b>Total</b>		<b>26.7</b>	<b>22.29</b>	<b>-</b>

**Notes:** Figures have been rounded and totals may reflect small rounding errors  
Resources were reported using a 10% DTR wt% cut-off grade.  
The DTR estimates are based on samples prepared at a grind size of 80% passing 45 micron.  
Fe% - head assay of composited drill samples

**ENDS**

**For further information regarding this announcement, contact:**

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For further information on the Company and its projects - visit the website at [www.deepyellow.com.au](http://www.deepyellow.com.au)

### About Deep Yellow Limited

Deep Yellow Limited (DYL) is an ASX-listed, advanced stage uranium exploration company with projects in the southern African nation of Namibia. It also has a listing on the Namibian Stock Exchange.

Deep Yellow's focus is in Namibia where its operations are conducted by its 100% owned subsidiary Reptile Uranium Namibia (Pty) Ltd (RUN). Its flagship is the Omahola Project where it is conducting resource and reconnaissance drilling along the high grade Ongolo– MS7 Alaskite trend. It is also evaluating a stand-alone project for its Tubas- Sand uranium deposit utilising physical beneficiation techniques it successfully tested in 2011.

In Australia the Company owns the Napperby Uranium Project and numerous exploration tenements in the Northern Territory and in the Mount Isa District in Queensland.



### Background Information on Metallurgical Testwork Programme

A large diameter diamond drilling programme (PQ – 85 mm) was completed early in 2012 to provide core for the next phase of metallurgical testwork, which was overseen by Mintrex Pty Ltd (Mintrex), as a part of an updated Scoping Study. The programme comprised approximately 1,000 metres of PQ core and generated some 16 tonnes of mineralised material from M62 and M63.

A series of metallurgical testwork programmes were conducted on the core, including testwork on the magnetite, recovery of hematite from magnetite tailings and recovery of hematite from a predominant hematite source.

The testwork has resulted in a plant design which can recover both magnetite and hematite – initially by dry magnetic separation (at a 3 millimetre grind size) at two fields strengths followed by a relatively coarse grind to 80% passing 250 micron followed by low intensity magnetic separation (LIMS) and low strength wet high intensity magnetic separation (WHIMS) (see Figure 3 below for a schematic plant layout). The magnetite is recovered to a concentrate grade of 68% Fe and the hematite to a grade of 61% Fe. This has been demonstrated on a range of samples ranging from 5% Fe in feed and up to 40% Fe in feed and with varying proportions of magnetite and hematite.

From the results of this testwork an estimation of yield and product grade from the resource grade can be made.

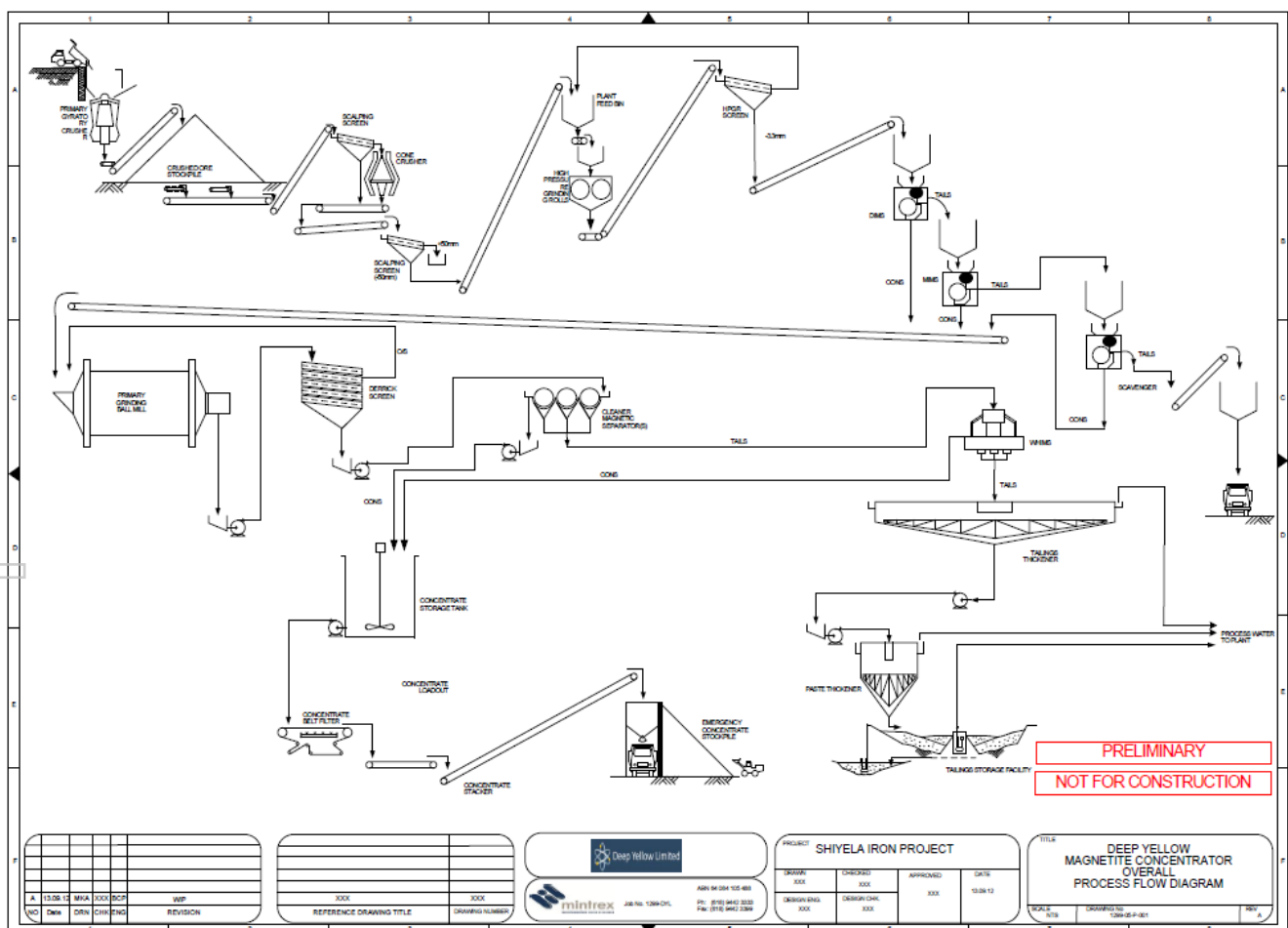


Figure 3: Shiyela Project – Schematic Plant Layout





The magnetite testwork covered samples from the magnetite zone and from samples in the hematite zone which also contains some magnetite. At 250 micron, there was a low grade result and when this was excluded, the grade increased to 68.3% Fe and 2% SiO<sub>2</sub>.

When the hematite samples were tested, the grade of the magnetite part averaged 68.6% Fe at 80% passing 250 micron. When the very low grade hematite samples were tested the magnetite fraction of these samples averaged 66.9% Fe which increased to 67.45% Fe when a very low sample of 63% Fe was excluded.

Since grade is adjustable by slight changes in grind size which is within the capability of the plant then 68% Fe has been adopted as the nominal grade of the magnetite after grinding to 80% passing 250 micron.

As the plant has a 1200 gauss collection of magnetite followed by a 7000 gauss dry magnetic separation and 3000 gauss WHIMS in the wet section – it has been assumed that all magnetite measured by the Davis Tube (3000 gauss) will be collected in the plant – i.e. 100% yield.

Hematite testwork has looked at hematite recovery from magnetite tailings and hematite recovery from ores classed as hematite. A programme was conducted to test the possible process route which involved testing three sizes for dry magnetic separation (DMS) and medium intensity dry magnetic separation (MIMS) and testing the dry concentrate at four different sizes using heavy liquid and tabling at three different gauss levels.

As a result of these tests the final process selection was for a grind of 80% passing 250 micron and a WHIMS gauss of 3000 gauss, which gave a concentrate grade of 63.8% and a 92.9% Fe yield to concentrate. A conservative estimate was thus made of an 85% Fe yield and with 68% Fe from the magnetite and 61% Fe from the hematite. The hematite grade was 62.3% Fe at the target conditions and magnetite from the same sample was 68.6% Fe.

The results of the updated scoping study, which will include a detailed description of the new process circuit design as well as estimated capital and operating costs etc., will be released before the end of December.



Figure 4: Shiyela PQ Core Showing Folded Magnetite Bands



### M63 Metallurgical Recovery

The potential mass recoveries and concentrate Fe grades for M63 at a grind size of p80 at 250 micron using a 10% Fe cut-off grade are shown in Table 2. The table is based on the following assumptions:

- The magnetite domain is >10% DTR and includes some hematite material which can be recovered from the magnetite tailings.
- The hematite domain has a low magnetic recovery from LIMS, with most of the recovery coming from WHIMS.
- The DTR sample data is based on a grind size of p80 at 45 micron. The data has been corrected based on the full scale plant grind size of p80 at 250 micron (DTR250). This is achieved by multiplying the DTR by the DTC Fe and dividing by 0.68 (based on the average DTC Fe grade at the p80 at 250 micron).
- Based on the metallurgy testwork, the grade of the magnetite recovery from LIMS has been assumed to be 68% Fe and the grade of the hematite recovery from WHIMS has been assumed to be 61% Fe.
- The recovered proportions have been derived from the grade estimates using the following method:
  1. A yield of 85% is assumed
  2. Hematite unit = yield (0.85) – (0.68 \* DTR250/100)
  3. Hematite recovery = hematite unit/0.61 \* 100
  4. Total weight recovery = DTR250 + hematite recovery
  5. Concentrate Fe is the sum product of the magnetite recovery at a grade of 68% Fe and the hematite recovery at a grade of 61% Fe.

**Table 2: Estimated Recoveries and Concentrate Grades M63**

FIELD	MAGNETITE DOMAIN	HEMATITE DOMAIN	TOTAL
<b>Tonnes (Mt)</b>	34.5	26.7	61.2
<b>Magnetite Recovery%</b>	15.6	5.5	11.2
<b>Hematite Recovery%</b>	12.0	25.0	17.7
<b>Total Recovery%</b>	<b>27.7</b>	<b>30.6</b>	<b>28.9</b>
<b>Concentrate Grade (Fe%)</b>	<b>65.0</b>	<b>62.3</b>	<b>63.8</b>

### Background Information on the Previous JORC Resource

DYL's wholly-owned Namibian subsidiary, Reptile Uranium Namibia (RUN), discovered Shiyela in 2008 when an IOCGU target hole made a 340 metre magnetite rich intercept from surface. In 2010 a decision was made to drill test two magnetic anomalies (M62 and M63) at Shiyela. It was recognised that if the two anomalies proved to be significant magnetite deposits a mining operation at Shiyela could be attractive because it has:

- Infrastructure advantages: ~ 45 km by road from Walvis Bay port and only 10 km from the main C14 road that leads to Walvis Bay. It is also only 10 km from the Kuiseb electricity substation which currently supplies the Langer Heinrich Uranium Mine.
- A potential source of water in the Tubas channel to the north of the project area.
- Exploration upside associated with a regional aeromagnetic anomaly over a 20 km strike length.
- The potential to produce a high-quality product at 68% Fe.



The first phase of exploration commenced in mid-2010, with the objective of identifying an initial resource of 120 to 150 Mt containing 20 to 25% magnetite to 200 metres vertical depth. If economically feasible such a deposit would sustain a 2 Mt per annum (product) mine life for 15 years.

The exploration programme, which was completed in mid-2011, comprised 210 RC and DD holes for 38,473 metres of drilling, confirming strongly mineralised zones in both deposits with a hematite fraction in addition to the main magnetite mineralisation.

The M62 deposit was drilled along strike for almost a kilometre over a maximum width of 500 metres and to a vertical depth of just over 300 metres. The M63 deposit has a strike length of over 800 metres, a width of 500 metres and has been drilled down to a maximum vertical depth of approximately 300 metres. Both deposits are open to depth and limited reconnaissance drilling has confirmed lateral extensions to M62 (M62R).

Golder completed a maiden JORC Mineral Resource estimate for Shiyela (ASX 6 December 2011) returning an Inferred Resource of 78.7 Mt at 18.88% Fe at a 10% DTR cut-off grade for the M62 and M63 magnetite deposits with an average DTR magnetite content of 16.17% (Table 3).

**Table 3: JORC Mineral Resource Estimate for the Shiyela Iron Project - December 2011**

Deposit	Category	Cut-off Grade	Tonnes (M)	Fe (%)	DTR (%)
M62	Inferred	10 wt% DTR	43.7	17.11	16.99
M63	Inferred	10 wt% DTR	35	21.09	15.16
<b>TOTAL RESOURCES</b>			<b>78.7</b>	<b>18.88</b>	<b>16.17</b>

**Notes:** Figures have been rounded and totals may reflect small rounding errors  
Resources were reported using a 10% DTR wt% cut-off grade.  
The DTR estimates are based on samples prepared at a grind size of 80% passing 45 micron.  
Fe% - head assay of composited drill samples

The initial work conducted on Shiyela included a Scoping Study which was completed in January 2012. This Scoping Study (see ASX release dated 25 January 2012) demonstrated that the Project had economic potential but that the resource was too small and the capital and operating costs estimates were relatively high. Further work was required and thus the second phase of the scoping study including the PQ drilling programme and more comprehensive metallurgical testwork was approved.

### Compliance Statement:

The information in this report that relates to Mineral Resources is based on information compiled by James Farrell who is a full-time employee of Golder Associates Pty Ltd and a Member and Chartered Professional of the Australasian Institute of Mining and Metallurgy. James Farrell has sufficient experience to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking, to qualify as a Competent Person as defined in the JORC Code (2004). James Farrell has relied on exploration data compiled by Dr Leon Pretorius who is the Managing Director of Reptile Uranium Namibia (Pty) Ltd and a Fellow of the Australasian Institute of Mining and Metallurgy. Dr Pretorius has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the JORC Code (2004). James Farrell has also relied on interpretation of metallurgical testwork compiled by Brian Povey who is a full-time employee of Mintrex Pty Ltd and a Fellow of the Australasian Institute of Mining and Metallurgy. Brian Povey has sufficient experience to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking, to qualify as a Competent Person as defined in the JORC Code (2004). James Farrell, Leon Pretorius and Brian Povey consent to the inclusion of this information in the form and context in which it appears.



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**Appendix 1**  
**Golder Resource Statements**



14 December 2012

Reference No. 127641059-004-L-Rev0

Mr Greg Cochran  
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Level 1, 329 Hay Street  
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## **MINERAL RESOURCE STATEMENT FOR M62 AND M62R DEPOSITS OF THE SHIYELA IRON PROJECT, NAMIBIA**

Dear Greg

Golder Associates Pty Ltd (Golder) has completed a resource model for the two magnetic anomalies (M62 and M62R) at the Shiyela Iron Project, in Namibia, using all available assay data as of 19 October 2012. The resource estimate was classified in accordance with "the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2004 Edition)".

Classification of the resource estimate was completed by Golder geologists, as described below, based principally on data density, geological confidence criteria and representativeness of sampling.

The *in situ* mineral resource is constrained to the mineralisation domain boundaries.

The Shiyela Iron Project consists of three magnetite mineralisation deposits, M62, M62R and M63. This letter corresponds to the magnetite estimation for M62 and M62R.

A total of 106 drill holes have been completed at M62 and a total of 31 drill holes have been completed at M62R. The drill holes at M62 are on 100 m spaced east-west cross-sections with holes at 50 m to 100 m centres on each section. The drill hole spacing at M62R is 50 m centres on three cross-sections, which are spaced more than 300 m apart.

## **GEOLOGY**

The Shiyela Iron Project sits in the Central Zone of the Damara Orogen. The regional geology encompasses rocks of Archean to Phanerozoic age. Most of Namibia's surface is either bedrock exposure or young surficial deposits of the Kalahari Deserts. The coastal and intracontinental arms of the late Proterozoic Damara Orogen (800 to 500 Ma) underlie large parts of north-western and central Namibia, with stable platform carbonates in the north and a variety of metasedimentary rocks pointing to more variable depositional conditions further south. Along the south-western coast, the volcanosedimentary Gariep Belt is interpreted as the southern extension of the Damara Orogen.

## **ASSUMPTIONS AND METHODOLOGY**

This Mineral Resource estimate is based on a number of factors and assumptions:

- All of the available drilling data was used for the Mineral Resource estimate.
- The survey control for collar positions was considered adequate for the purposes of this study.
- Sample preparation, Davis Tube determinations and loose powder X-ray Fluorescence (XRF) analysis of the head samples were conducted by Reptile Uranium Namibia Pty Ltd's (RUN) laboratory in Swakopmund. RUN is a subsidiary of Deep Yellow Limited (DYL).



- Fused-bead XRF analysis for concentrate samples was carried out by Genalysis Laboratory Services in Johannesburg.
- The quality assurance and quality control (QAQC) program included standards, duplicates and cross laboratory checks for Fe loose powder XRF. Those results are considered to be adequate.
- The M62 magnetite domains used in the 2011 resource estimate by Golder were reviewed and updated based on Davis Tube recovery (DTR) data. Magnetite domains were modelled for M62R based on DTR data. All magnetite and weathering domains were used to flag the sample data for statistical analysis and estimation.
- Statistical and geostatistical analysis was carried out on drilling data composited to 4 m downhole. This included variography to model spatial continuity in the geological domains.
- The Ordinary Kriging (OK) interpolation method was used for resource estimation of:
  - DTR for both M62 and M62R deposits, using variogram parameters defined from the geostatistical analysis from M62 samples. DTR is the wt% (mass recovery) produced from Davis Tube testwork at low intensity (1 Amp) setting conducted on 4 m drill samples pulverised to a liberation grind size of 80% passing 45 µm. The full-scale plant design is expected to use a grind size of 80% passing 250 µm. Magnetic concentrates produced at a grind size of 80% passing 250 µm will be slightly lower in Fe and have a slightly higher mass magnetic recovery.
  - Davis Tube Concentrate (DTC) grades for Fe, SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, CaO, MgO, P, S, Na<sub>2</sub>O, K<sub>2</sub>O, LOI, MnO and TiO<sub>2</sub> for M62, using variogram parameters defined from the geostatistical analysis.
  - Fe head assay based on loose powder XRF samples for M62R, using variogram parameters defined from the geostatistical analysis of M62 samples.
- Estimations for concentrate grades were weighted by DTR in order to appropriately reflect the relationship between DTR and the DTC assays. Weighting was completed by calculating the accumulation (DTR × DTC assay) and subsequently back calculating the DTC assay estimates by dividing by relevant estimated DTR values.

The average *in situ* densities shown in Table 1 were assigned to the domains based on density data from drill core.

**Table 1: Density Assigned to the Domains**

Domain	Weathering	Density (t/m <sup>3</sup> )
Magnetite	Oxide	3.10
	Fresh	3.00
Waste	Oxide	2.92
	Fresh	2.91

## MINERAL RESOURCE STATEMENT

The resource estimates were classified in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2004). The classification was considered appropriate on the basis of drill hole spacing, sample interval, geological interpretation and representativeness of all available assay data.

This resource has been defined using geological boundaries and a cut-off grade of 5% DTR. All estimated concentrate grades were weighted by DTR.

The resource is based on the Ordinary Kriging interpolated block model *dyl\_ok\_complete.bmf* and is reported below the topography for fresh and oxide material for M62 (Table 2) and M62R (Table 3). M62 and M62R include grade estimates for Fe from loose powder analysis. These estimates have been classified as Inferred Resources and include 44.7 Mt at 17.33% Fe for M62 and 9.3 Mt at 16.3% Fe when reported at a 10% DTR cut-off grade. The drill hole and domain locations are shown in Figure 1.

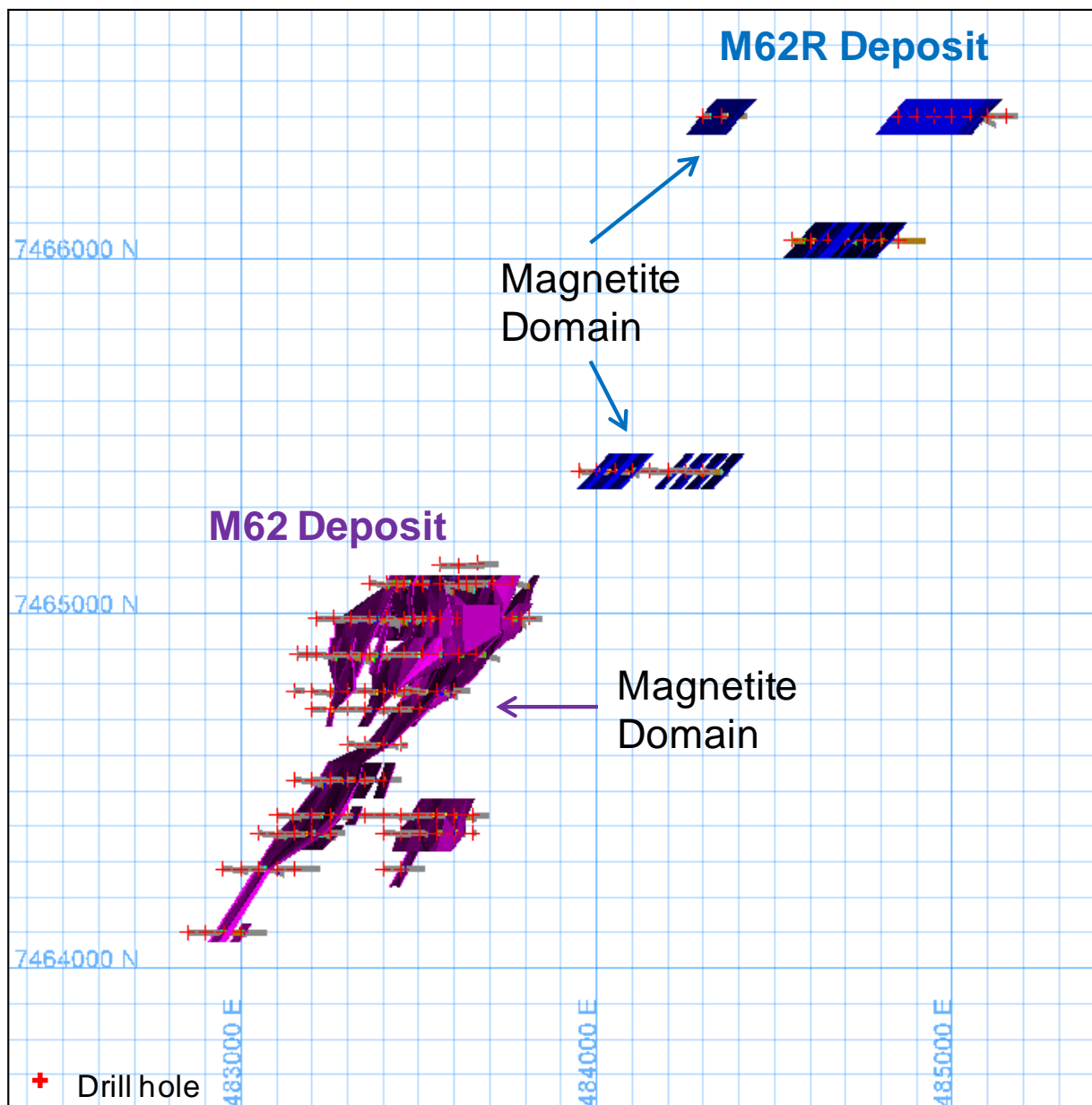


Figure 1: Magnetite Domains and Drill Hole Locations for M62 and M62R

**Table 2: Magnetite Domain Mineral Resources for M62 at a Cut-Off Grade of 10% DTR**

Classification	Weathering	Tonnes (Mt)	Fe%	DTR%	DTC Fe%	DTC Al <sub>2</sub> O <sub>3</sub> %	DTC SiO <sub>2</sub> %	DTC CaO%	DTC K <sub>2</sub> O%	DTC LOI%	DTC MgO%	DTC MnO%	DTC Na <sub>2</sub> O%	DTC P%	DTC S%	DTC TiO <sub>2</sub> %
<b>Indicated</b>	Fresh	35.2	-	17.62	69.75	0.94	0.81	0.05	0.04	-3.06	0.21	0.49	0.04	0.007	0.015	0.232
<b>Inferred</b>	Oxide	3.4	-	14.17	68.76	0.85	0.99	0.07	0.04	-1.56	0.20	0.63	0.04	0.014	0.010	0.174
	Fresh	6.0	-	17.33	69.81	0.89	0.69	0.05	0.03	-3.10	0.19	0.50	0.03	0.007	0.015	0.203
	<b>Total</b>	<b>9.4</b>	<b>-</b>	<b>15.75</b>	<b>69.43</b>	<b>0.87</b>	<b>0.80</b>	<b>0.06</b>	<b>0.04</b>	<b>-2.54</b>	<b>0.20</b>	<b>0.54</b>	<b>0.04</b>	<b>0.010</b>	<b>0.013</b>	<b>0.192</b>
<b>Grand Total</b>		<b>44.7</b>	<b>17.33</b>	<b>16.37</b>	<b>69.68</b>	<b>0.92</b>	<b>0.81</b>	<b>0.05</b>	<b>0.04</b>	<b>-2.95</b>	<b>0.20</b>	<b>0.50</b>	<b>0.04</b>	<b>0.008</b>	<b>0.015</b>	<b>0.224</b>

**Table 3: Magnetite Domain Mineral Resources for M62R at a Cut-Off Grade of 10% DTR**

Classification	Weathering	Tonnes (Mt)	Fe%	DTR%
<b>Inferred</b>	Oxide	1.9	15.46	15.09
	Fresh	7.4	16.52	17.99
<b>Grand Total</b>		<b>9.3</b>	<b>16.30</b>	<b>17.40</b>



The Competent Person responsible for the geological model, Mineral Resource estimation and classification is James Farrell who is a full-time employee of Golder Associates Pty Ltd and a member and Chartered Professional of the Australasian Institute of Mining and Metallurgy. James Farrell has sufficient relevant experience to the style of mineralisation and type of deposit under consideration and to the activity for which he is undertaking to qualify as a Competent Person as defined in the JORC Code (2004 Edition). James Farrell consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.

Yours faithfully

**GOLDER ASSOCIATES PTY LTD**



Sandy Sen  
Senior Resource Geologist

SS/JNF/hsl



James Farrell  
Associate, Senior Geologist

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14 December 2012

Reference No. 127641059-005-L-Rev0

Mr Greg Cochran  
Deep Yellow Limited  
Level 1, 329 Hay Street  
SUBIACO WA 6008

## MINERAL RESOURCE STATEMENT FOR M63 DEPOSIT OF THE SHIYELA IRON PROJECT, NAMIBIA

Dear Greg

Golder Associates Pty Ltd (Golder) has completed a resource model for the M63 magnetic anomaly at the Shiyela Iron Project, in Namibia, using all available assay data as of 19 October 2012. The resource estimate was classified in accordance with "the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2004 Edition)".

Classification of the resource estimate was completed by Golder geologists, as described below, based principally on data density, geological confidence criteria and representativeness of sampling.

The *in situ* Mineral Resource is constrained to the mineralisation domain boundaries.

The Shiyela Iron Project consists of three magnetite mineralisation deposits, M62, M62R and M63. This letter corresponds to the magnetite and hematite estimation for M63.

A total of 81 reverse circulation and diamond drill holes have been completed at M63. The drill holes are on north-south cross-sections with holes at 50 m to 100 m centres on each section.

## GEOLOGY

The Shiyela Iron Project sits in the Central Zone of the Damara Orogen. The regional geology encompasses rocks of Archean to Phanerozoic age. Most of Namibia's surface is either bedrock exposure or young surficial deposits of the Kalahari Deserts. The coastal and intracontinental arms of the late Proterozoic Damara Orogen (800 to 500 Ma) underlie large parts of north-western and central Namibia, with stable platform carbonates in the north and a variety of metasedimentary rocks pointing to more variable depositional conditions further south. Along the south-western coast, the volcanosedimentary Gariep Belt is interpreted as the southern extension of the Damara Orogen.

## ASSUMPTIONS AND METHODOLOGY

This Mineral Resource estimate is based on a number of factors and assumptions:

- All of the available drilling data was used for the Mineral Resource estimate.
- The survey control for collar positions was considered adequate for the purposes of this study.
- Sample preparation, Davis Tube determinations and loose powder X-ray Fluorescence (XRF) analysis of the head samples were conducted by Reptile Uranium Namibia Pty Ltd's (RUN) laboratory in Swakopmund. RUN is a subsidiary of Deep Yellow Limited (DYL).



- Fused-bead XRF analysis for the magnetic concentrate samples and a limited number of head samples was carried out by Genalysis Laboratory Services in Johannesburg. The fused bead data represents 24% of the total head composites available for estimation, with the remaining head Fe values analysed from loose powder.
- The quality assurance and quality control (QAQC) program included standards, duplicates and cross laboratory checks for Fe analyses by loose powder XRF. Those results are considered to be adequate.
- M63 includes hematite and magnetite domains, with the magnetite domains occurring completely within the hematite domains. The magnetite domains were based on a Davis Tube Recovery (DTR) cut-off grade of 10%. The hematite domains were modelled using a cut-off grade of 17% Fe from loose powder and fused bead analysis. All magnetite, hematite and weathering domains were used to flag the sample data for statistical analysis and estimation.
- Statistical and geostatistical analysis were carried out on drilling data composited to 4 m downhole. This included variography to model spatial continuity in the geological domains.
- The Ordinary Kriging (OK) interpolation method was used for resource estimation of:
  - DTR, using variogram parameters defined from the geostatistical analysis from M63 samples. DTR is the wt% (mass recovery) produced from Davis Tube testwork at low intensity (1 Amp) setting conducted on 4 m drill samples pulverised to a liberation grind size of 80% passing 45 µm. The full-scale plant design is expected to use a grind size of 80% passing 250 µm. Magnetic concentrates produced at a grind size of 80% passing 250 µm will be slightly lower in Fe and have a slightly higher mass magnetic recovery.
  - Davis Tube Concentrate (DTC) grades for Fe, SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, CaO, MgO, P, S, Na<sub>2</sub>O, K<sub>2</sub>O, LOI, MnO and TiO<sub>2</sub>, using variogram parameters defined from the geostatistical analysis.
  - Head grades for Fe, SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, CaO, MgO, P, S, Na<sub>2</sub>O, K<sub>2</sub>O, LOI, MnO and TiO<sub>2</sub>, using variogram parameters defined from the geostatistical analysis for Fe from loose powder analysis. The loose powder Fe variogram was used for the other head elements due to the limited number of samples available for variography and grade interpolation.
  - Head Fe was estimated using analytical results from loose powder XRF and fused bead XRF.
- Estimations for concentrate grades were weighted by DTR in order to appropriately reflect the relationship between DTR and the DTC assays. Weighting was completed by calculating the accumulation (DTR x DTC assay) and subsequently back calculating the DTC assay estimates by dividing by relevant estimated DTR values.

The average *in situ* densities shown in Table 1 were assigned to the domains based on density data from drill core.

**Table 1: Density Assigned to the Domains**

Domain	Weathering	Density (t/m <sup>3</sup> )
Mag. Only	Oxide	3.10
	Fresh	3.00
Mag. + Hem.	Oxide	3.07
	Fresh	3.07
Hem. Only	Oxide	3.19
	Fresh	3.09
Waste	Oxide	2.92
	Fresh	2.91

## MINERAL RESOURCE STATEMENT

The resource estimates were classified in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2004). The classification was considered appropriate on the basis of drill hole spacing, sample interval, analytical method, geological interpretation and representativeness of all available assay data.

The classification of Indicated Resources was limited to areas with fused bead head analyses and Davis Tube data. Areas with only loose powder Fe analyses were classified as Inferred Resources.

This resource has been reported using geological boundaries and a cut-off grade of 10% Fe. The Indicated Resources reported in Table 2 include an Fe grade estimate from fused bead XRF and are based on a fused bead XRF Fe cut-off grade. The Inferred Resources reported in Table 2 and Table 3 includes an Fe grade estimate from loose powder XRF and are reported using a loose powder XRF Fe cut-off grade.

All estimated concentrate grades were weighted by DTR.

The resource is based on the Ordinary Kriging interpolated block model *dyl\_ok.bmf* and is reported below the topography for fresh and oxide material for M63. The drill holes and domains are shown in Figure 1.

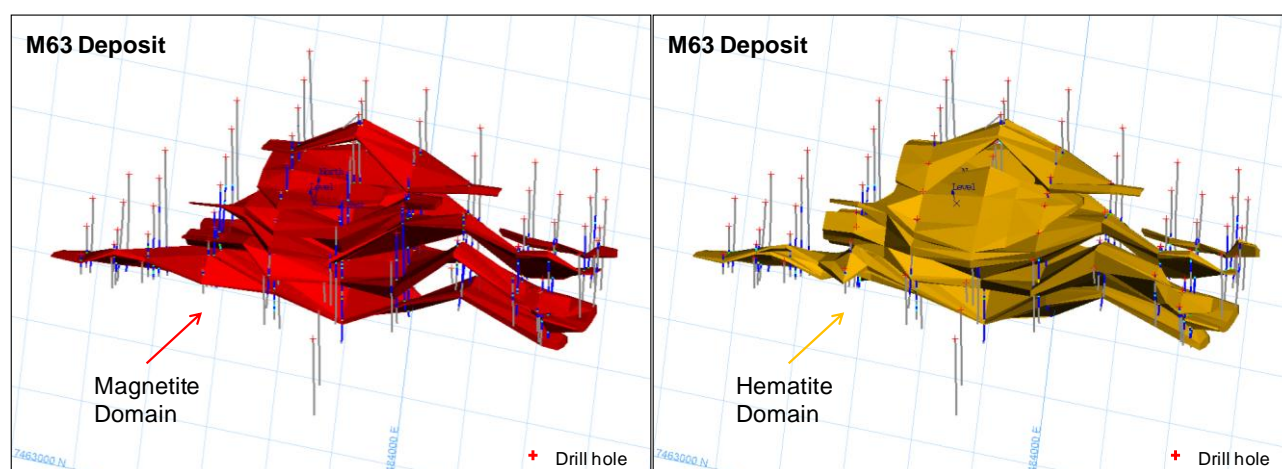


Figure 1: Magnetite and Hematite Domains with Drill Hole Location for M63

Table 2: Magnetite Domain Mineral Resources for M63 at a Cut-Off Grade of 10% Fe

Classification	Indicated Resources		Inferred Resources					
Weathering	Fresh		Oxide		Fresh		Total	
Tonnes (Mt)	5.31		0.53		28.65		29.18	
Variable	Head	DTC	Head	DTC	Head	DTC	Head	DTC
DTR%	15.78	-	15.09	-	15.22	-	15.21	-
Fe%	22.32	69.59	21.64	68.81	20.79	69.52	20.80	69.50
Al <sub>2</sub> O <sub>3</sub> %	6.86	0.77	-	0.65	-	0.73	-	0.73
SiO <sub>2</sub> %	51.88	0.74	-	0.56	-	0.60	-	0.60
CaO%	1.23	0.06	-	0.06	-	0.05	-	0.05
K <sub>2</sub> O%	2.15	0.03	-	0.02	-	0.03	-	0.02
LOI%	0.48	-3.15	-	-1.74	-	-3.16	-	-3.13
MgO%	2.45	0.35	-	0.27	-	0.27	-	0.27
MnO%	0.53	1.15	-	1.65	-	1.48	-	1.49
Na <sub>2</sub> O%	0.54	0.03	-	0.02	-	0.03	-	0.03
P%	0.161	0.008	-	0.012	-	0.007	-	0.007
S%	0.038	0.008	-	0.007	-	0.009	-	0.009
TiO <sub>2</sub> %	0.50	0.05	-	0.06	-	0.06	-	0.06



**Table 3: Hematite Domain Mineral Resources for M63 at a Cut-Off Grade of 10% Fe**

Classification	Inferred Resources		
Weathering	Oxide	Fresh	Total
Tonnes (Mt)	1.96	24.77	26.73
Variable	Head	Head	Head
Fe%	22.62	22.26	22.29

## METALLURGY

The metallurgy testwork for M63 was completed by Mintrex Pty Ltd (Mintrex). DYL provided Golder with the following memorandum from Mintrex which documents the scoping-level process design and iron yields recoveries:

*Povey, B. C. 2012. Metallurgical Yield and Recovery. Unpublished memorandum for Deep Yellow Limited by Mintrex Pty Ltd. 2 November 2012.*

The following overview of the metallurgy has been summarised from Povey (2012):

The Shiyela metallurgy testwork has been used for a scoping-level plant design which can recover both magnetite and hematite. The plant will initially use dry magnetic separation at two fields strengths followed by a relatively coarse grind to 80% passing 250 µm, followed by low intensity magnetic separation (LIMS) and low strength wet high intensity magnetic separation (WHIMS). The magnetite is recovered by LIMS to a concentrate grade of 68% Fe and the hematite is recovered by WHIMS to a concentrate grade of 61% Fe.

The magnetite concentrate grade is assumed to be 68% Fe at the plant design grind size of 80% passing 250 µm, rather than the higher concentrate Fe grades and corresponding lower mass recoveries that are achieved from a grind size of 80% passing 45 µm which was used for the bench-scale Davis Tube testwork.

The magnetite and hematite concentrates will be combined to produce the final iron concentrate from M63.

## COMPETENT PERSON'S STATEMENT

The Competent Person responsible for the Mineral Resource estimation and classification is James Farrell. Mr James Farrell is a full-time employee of Golder Associates Pty Ltd and a Member and Chartered Professional of the Australasian Institute of Mining and Metallurgy. James Farrell has sufficient relevant experience to the style of mineralisation and type of deposit under consideration and to the activity for which he is undertaking to qualify as a Competent Person as defined in the JORC Code (2004 Edition). James Farrell consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.

Yours faithfully

**GOLDER ASSOCIATES PTY LTD**



Patricia Guimaraes  
Resource Geologist

PG/JNF/hsl



James Farrell  
Associate, Senior Geologist

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## Appendix 2

### MINTREX MEMO ON METALLURGICAL YIELD AND RECOVERY

#### 1. INTRODUCTION

Metallurgical testwork has been conducted over a series of programmes on the Shiyela deposit. This has encompassed testwork on the magnetite, recovery of hematite from magnetite tailings and recovery of hematite from a predominant hematite source.

The testwork has resulted in a plant design which can recover both magnetite and hematite – initially by dry magnetic separation at two fields strengths followed by a relatively coarse grind to 80% passing 250 micron followed by low intensity magnetic separation (LIMS) and low strength wet high intensity magnetic separation (WHIMS). The magnetite is recovered to a concentrate grade of 68% Fe and the hematite to a grade of 61% Fe. This has been demonstrated on a range of samples ranging from 5% Fe in feed and up to 40% Fe in feed and with varying proportions of magnetite and hematite.

From this an estimate of yield and product grade from the resource grade can be made.

#### 2. BASIS OF RESULTS

##### 2.1 Magnetite Testwork

The magnetite testwork covered samples from the magnetite zone and from samples in the hematite zone but which contained some magnetite

Six composites were provided to represent the magnetite zone and gave the following data:

80% Passing							
Micron	%Fe	%SiO <sub>2</sub>	%Al <sub>2</sub> O <sub>3</sub>	%CaO	%MgO	%MnO	%P
250	67.32	3.28	1.62	0.18	0.59	0.76	0.025
150	69.53	1.22	1.26	0.07	0.48	0.78	0.009
75	70.18	0.73	0.91	0.06	0.41	0.78	0.004
45	70.32	0.81	0.77	0.03	0.35	0.78	0.005

At 250 micron, there was a low grade result and when this was excluded, the grade increased to 68.3% Fe and 2% SiO<sub>2</sub>.

When the hematite samples were tested then the grade of the magnetite part averaged 68.6% Fe at 80% passing 250 micron. When the very low grade hematite samples were tested the magnetite part of these samples averaged 66.9% Fe which increased to 67.45% Fe when a very low sample of 63% Fe was excluded.

Since the grade is adjustable by slight changes in grind which is within the capability of the plant then 68% Fe has been adopted as the nominal grade of the magnetite after grinding to 80% passing 250 micron.

Since the plant has a 1200 gauss collection of magnetite followed by a 7000 gauss dry magnetic separation and 3000 gauss WHIMS in the wet section – it has been assumed that all magnetite measured by the Davis Tube (3000gauss) will be collected in the plant – ie 100% yield.



## 2.2 Hematite testwork

Hematite testwork has looked at hematite recovery from magnetite tailings and hematite recovery from ores classed as hematite.

### 2.2.1 Early work

In the magnetite tailings the testwork done at the time did not reach very high grade and would only be salable when mixed with magnetite. The Fe yield averaged about 72%

### 2.2.2 Hematite Sample – determining conditions

A programme was conducted to test the possible process route which involved:

Testing three sizes for DMS and MIMS dry magnetic separation

Testing the dry concentrate at four different sizes using:

- Heavy liquid
- Tabling
- Three different gauss levels

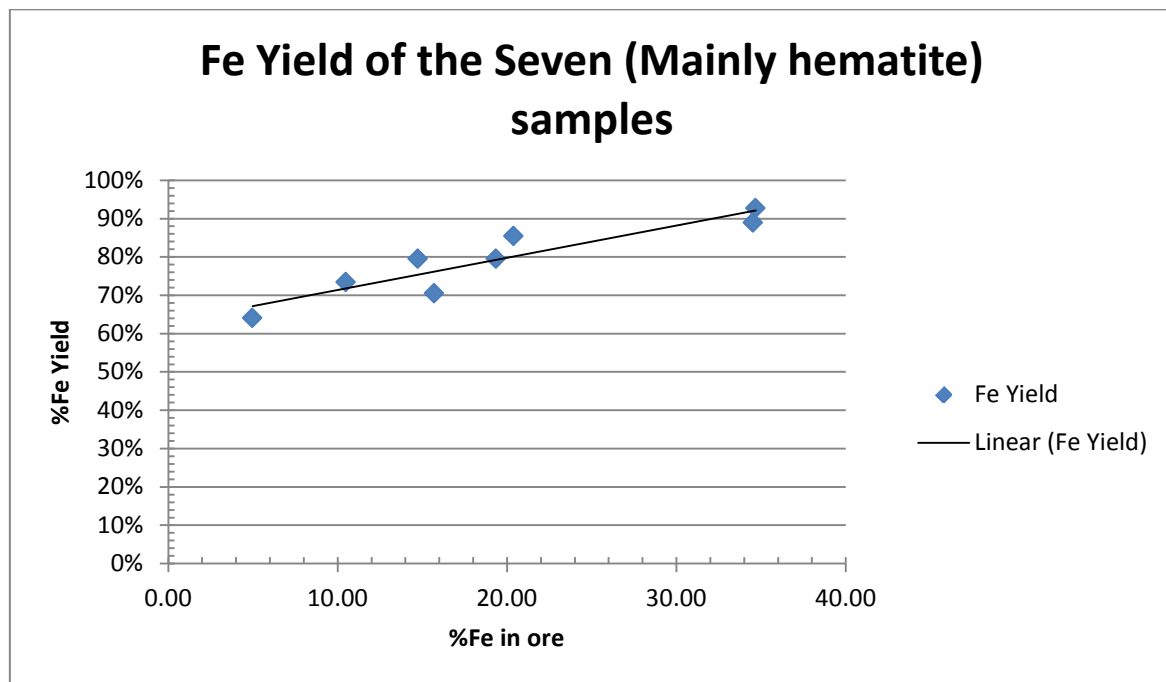
With the following results – the final process selection being a grind of 80% passing 250 micron and a WHIMS gauss of 3000gauss

Grade of Concentrate						
Passing Size	3,000 G	5,000 G	10,000 G	HL	Gravity	Gravity 60%
500	55.7	52	50.8	64.6	60.1	
<b>250</b>	<b>63.6</b>	<b>60.2</b>	<b>56.4</b>	<b>66.3</b>	<b>64.4</b>	<b>61.4</b>
125	62.4	61.8	57.4	65.6	63.6	
106	61.5	60.6	57.1	65.4	62.9	
Fe Yield to Concentrate						
Passing Size	3,000 G	5,000 G	10,000 G	HL	Gravity	Gravity 60%
500	96.8%	97.3%	98.2%	98%	59%	
<b>250</b>	<b>92.2%</b>	<b>94.2%</b>	<b>96.5%</b>	<b>95%</b>	<b>73%</b>	<b>86%</b>
125	89.5%	93.1%	96.1%	92%	94%	
106	82.7%	90.3%	94.2%	88%	84%	

From this data a conservative estimate was made of an 85% Fe yield and with 68% Fe from the magnetite and 61% Fe from the hematite. The hematite grade was 62.5% Fe at the target conditions and magnetite from the same sample was 68.6% Fe.

From this work seven low grade samples of different grades, mainly hematite samples were tested by the proposed plant process design.

The Fe yield to a grade above 61% Fe is shown in the graph below – essentially all samples exceed 70% Fe yield other than when the feed grade dropped below 5% Fe



The seven samples gave the following results – where the predicted result assumed 85% Fe yield of the feed Fe, with the DTR weight recovery assumed to be the magnetite proportion at 68% Fe and the remaining Fe being hematite at 61% Fe

Performance to Final product		A	B	C	D	E	F	G	Average
%Fe in Feed		14.74	4.97	10.49	34.68	34.52	15.70	20.39	19.4%
Grade	Measure	62.2%	61.1%		63.5%	64.3%	65.2%	61.7%	63.0%
	Predict	61.6%	61.1%	61.5%	68.0%	61.4%	63.0%	62.7%	62.8%
Fe Yield									
Fe Yield	Measure	79.5%	64.0%	73.4%	92.7%	88.9%	70.5%	85.4%	79.2%
	Predict	85%	85%	85%	85%	85%	85%	85%	85.0%

The grade was slightly higher than predicted and the yield was slightly lower on average – though these samples were predominantly less the mine average.

However the sample which had a grade closest to the mine grade of 20.7% Fe – sample G – met the 85% Fe yield predicted even with low levels of magnetite.

### 3. ESTIMATE OF METALLURGICAL RECOVERY ACROSS THE RESOURCE

The proposed procedure is:

- 85% of the Fe will recovered to concentrate
- The Davis Tube concentrate weight recovery is assumed to produce concentrate at 68% Fe. (The DTR is conducted at 80% -45micron so is closer to 70% Fe)
- The remaining Fe is estimated at 61% Fe to give a weight yield from the hematite
- The two concentrates are mixed to give a total weight recovery and grade.
- If no DTR is available then assume it is all hematite





The alternative method is to assume 100% Fe yield from the magnetite and 70% from the hematite – more cumbersome process – though the two are compared below

			85% Yield Method	
A	Head Grade		20.3	%Fe
B	DTR Wt Recovery		14.2	% to Cons
D	Fe units available (Head x 0.85)	A x 0.85	17.26	
E	Fe units with Mags	B X 0.68	9.66	
F	Fe units for Hematite	D - E	7.60	
G	Wt at 61%	F/0.61	12.5	
H	<b>Total Weight Recovery</b>	B + G	<b>26.7</b>	
	<b>Grade</b>	D/H	<b>64.7%</b>	
			100% and 70% Yield	
I	Magnetics	B *0.68 *1.0	9.7	
J	Remaining units	A - I	10.6	
K	Fe units Yield at Hematite	J * 0.7	7.5	
L	Wt at 61%	F/0.61	12.2	
M	<b>Total Weight Recovery</b>	B + L	<b>26.4</b>	
	<b>Grade</b>	(B*0.68+L*0.61)/M	<b>64.8%</b>	

At the scoping level study the 85% method is probably the simpler to use. Both give a similar result and both are probably conservative. The following table shows that the Fe units recovered by the LIMS units exceeds the units predicted by DTR - for each of the samples – partly due to the coarser grind in the plant than for the DTR.

	A	B	C	D	E	F	G
DTR Fe Units	1.18		0.68	31.04	1.89	4.11	4.72
Fe units Recovered	1.68	0.02	1.01	34.59	3.39	6.67	9.16

Yours faithfully,  
**MINTREX**

B C Povey  
**Principal Consulting Metallurgist**