



SheffieldResources  
LIMITED

Sheffield Resources Ltd  
ACN 125 811 083  
14 Prowse Street West Perth WA

31 October 2013

## QUARTERLY REPORT FOR PERIOD ENDING 30 SEPTEMBER 2013

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### HIGHLIGHTS

#### *Dampier HMS project*

- Record intersection of **82.5m @ 7.53% HM** from first batch of assay results at Thunderbird
- Excellent continuity of high grade mineralisation confirmed by closely-spaced infill drilling
- Drilling programme completed subsequent to end of quarter – further assay results to follow

#### *Red Bull Nickel project*

- Three significant new nickel targets outlined by initial broadly-spaced aircore drilling
- Intervals of up to **8m @ 0.41% Ni** with anomalous Cu, Co and PGEs
- Targets occur within an 8km strike length of a layered mafic-ultramafic complex
- Geochemical signature and geological setting considered favourable for magmatic nickel sulphide deposits

#### *Pilbara Iron project*

- Significant new zone of high grade DSO iron mineralisation identified at Mt Vettel
- Average **61.24% Fe** from 37 rock chip samples with very low levels of impurities
- Within potential trucking distance of Port Hedland

#### *Eneabba HMS project*

- Maiden Resource for Drummond Crossing of **52.2Mt @ 2.1% HM** (Indicated and Inferred) for 1.07Mt contained HM
- Drummond Crossing is a dunal-style HM deposit with a high value mineral assemblage (including 14% zircon, 10% rutile) and minimal overburden
- 4 new dunal style HM targets outlined

As at 30/09/13:

Issued Shares	<b>108.3M</b>	ASX Code	<b>SFX</b>	Closing Price	<b>\$0.47</b>
Market Cap	<b>\$50.9M</b>	Cash Reserves	<b>\$5.3M</b>		

## OVERVIEW

Sheffield has Heavy Mineral Sands (HMS), Nickel, Iron, Potash and Talc projects, all situated within the state of Western Australia (Figure 1). Sheffield has 100% ownership of all projects.

Drilling continued throughout the quarter on the Company's flagship Dampier HMS project and concluded subsequent to the end of the quarter, with the total programme comprising 326 holes for 21,750m. Sheffield continued to progress scoping studies on the Thunderbird HMS deposit at Dampier.

A resource estimate was completed on the Drummond Crossing deposit (Eneabba HMS project). Grassroots mapping and sampling programmes were undertaken on the Dampier HMS, Red Bull Nickel, Pilbara Iron and Eneabba HMS projects.

Exploration expenditure for the quarter is estimated to be \$2,722,000.



Figure 1: Location of Sheffield's Projects

## DAMPIER HEAVY MINERAL SANDS

The Dampier HMS Project is located near Derby in the Canning Basin region of Western Australia and contains the large, high grade Thunderbird deposit and a second, underexplored HMS occurrence named Argo (Figure 2).

Thunderbird is one of the largest and highest grade mineral sands deposits to be discovered in the last decade. It has mineral resources of **1.37Bt @ 6.1% HM** (Indicated & Inferred) for 83Mt of contained HM (at 2% HM cut-off). This resource includes 5.7Mt of zircon, 1.3Mt of rutile, 3.6Mt of leucoxene and 24Mt of ilmenite (Appendix 1).

Within the resource is a coherent high grade core of **517Mt @ 10.1% HM** (Indicated and Inferred) containing 3.6Mt of zircon, 0.8Mt of rutile, 2.2Mt of leucoxene and 15.2Mt of ilmenite (at 7.5% HM cut-off). This zone, which averages 20m thickness, is the focus of initial development studies.

Metallurgical testwork and marketing studies indicate that Thunderbird will generate high quality, marketable products, including premium grade zircon, using conventional processing technology.

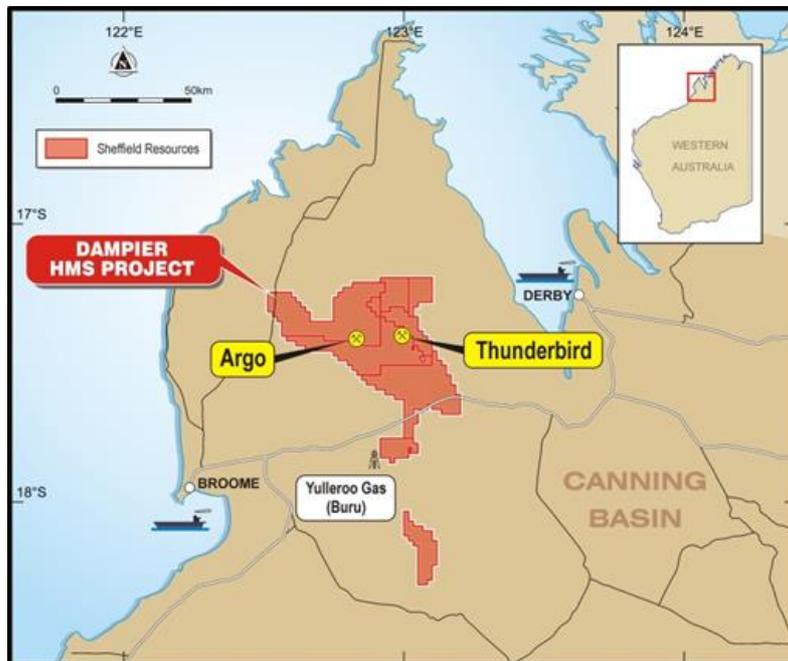


Figure 2: Location of Dampier HMS project

Sheffield's second aircore drilling campaign at Dampier commenced on 8 July 2013 and concluded subsequent to the end of the quarter. The programme comprised 281 holes for 18,845m at Thunderbird and 45 holes for 2,905m at Argo (total 326 holes for 21,750m).

Subsequent to the end of the quarter, the Company announced the first batch of assay results from 56 infill drill holes at Thunderbird, including the following intersections:

- **82.5m @ 7.53% HM from 24m (THAC311), including 46.5m @ 9.2% HM from 25.5m**
- **43.5m @ 8.99% HM from 22.5m (THAC188), including 39m @ 9.7% HM from 24m**
- **42m @ 8.01% HM from 3m (THAC187), including 28.5m @ 10.3% HM from 4.5m**
- **36m @ 8.61% HM from 1.5m (THAC177), including 24m @ 12.1% HM from 1.5m**
- **46.5m @ 7.55% HM from 14.5m (THAC197), including 28.5m @ 10.7% HM from 28m**

(Refer to ASX release dated 21 October 2013 for full details).

The intersection of **82.5m @ 7.53% HM** in drill hole THAC311 is the best achieved to date in terms of both thickness and contained heavy mineral. Significantly, it occurs on the southwest margin of the current resource model and demonstrates exceptionally thick mineralization which is open down-dip to the southwest (Figures 3 & 4).

The results also demonstrate excellent continuity of both the mineralised sequence and the high grade zones.

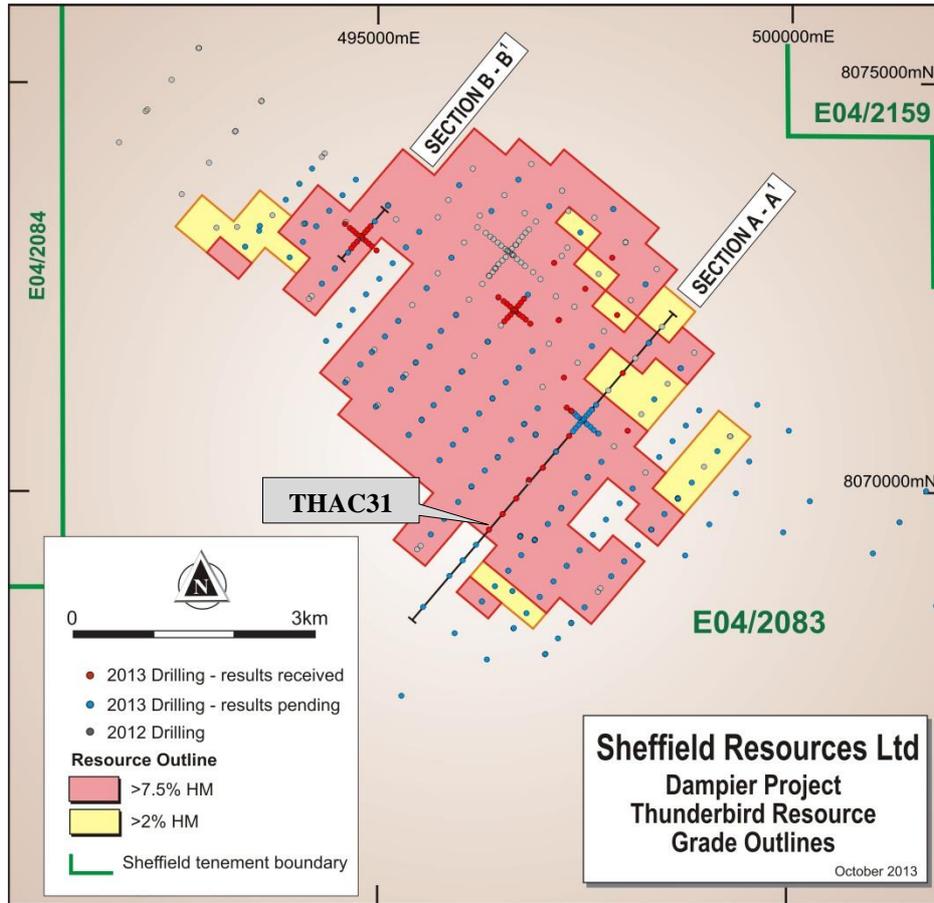


Figure 3: Thunderbird drill collar plan showing location of holes with assay results reported to date, and outline of blocks in the current (Dec 2012) resource above 7.5% HM and 2% HM, projected to surface

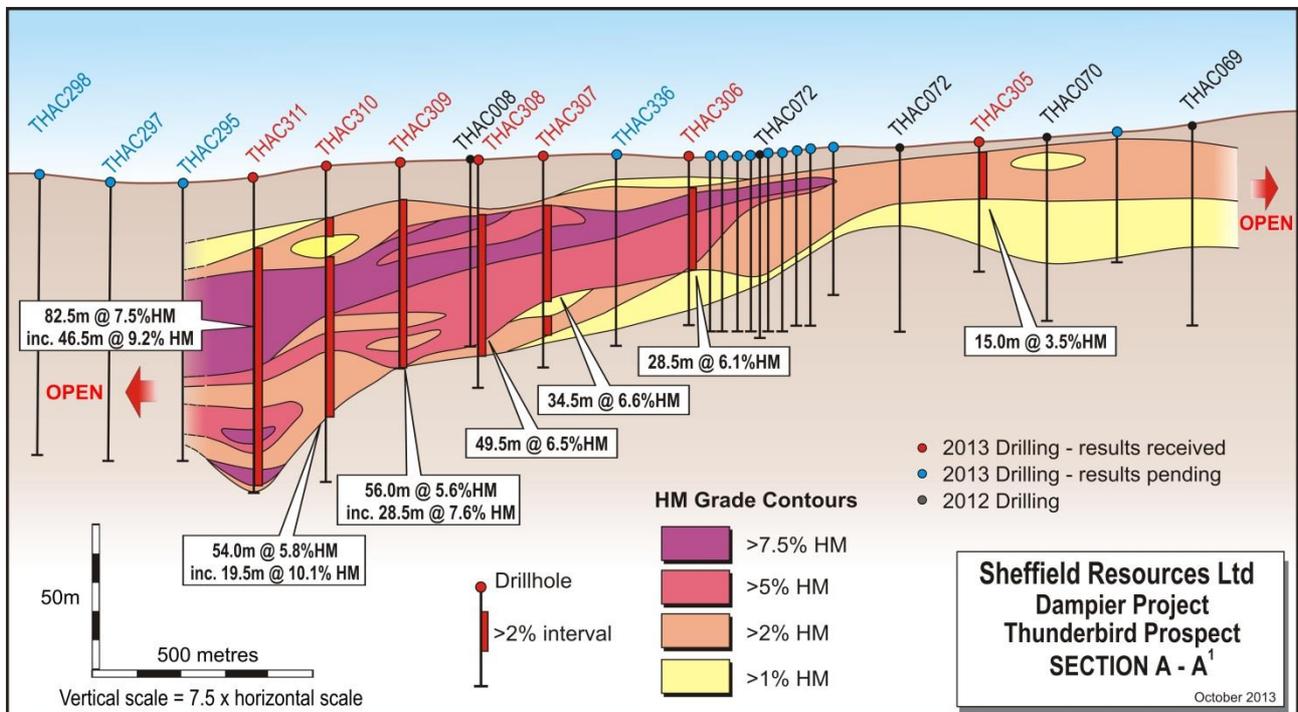


Figure 4: Section A-A', looking northwest showing the excellent continuity between holes of the mineralised envelope (>2% HM), and the higher grade zones (>5% and >7.5% HM)

Work continues on the Thunderbird Scoping Study which will be completed in Q1 2014 and will incorporate the results of a resource upgrade due in the same quarter.

## RED BULL NICKEL

The Red Bull project comprises two tenements with a total area of 525km<sup>2</sup> located 120km east of Norseman in WA. The northern tenement E69/3052 lies within 20km of Sirius Resources NL's (ASX:SIR) Nova and Bollinger Ni-Cu deposits and covers mafic and ultramafic rocks of the Fraser Complex which are prospective for magmatic Ni-Cu deposits.

In addition to Red Bull, Sheffield has a further four tenements in the Fraser Range region, three of which are yet to be granted (Figure 5).

During the Quarter, the Company announced three substantial nickel-copper-cobalt anomalies identified from regional aircore drilling (367 holes for 13,129m) completed at its Red Bull Nickel-Copper Project in July.

The three anomalies, named the Earlobe, Stud and Sleeper prospects (collectively the "Northern Targets"), occur within an 8km strike length of a layered mafic-ultramafic complex in the northern part of the Red Bull project. The anomalies remain open, with 3km of prospective strike yet to be tested by aircore drilling (Figure 6).

Significant results from each prospect include:

### Stud

- **22m @ 0.26% Ni, 121ppm Cu, 223ppm Co, 7.5ppb Pt from 32m (REAC240) including 8m @ 0.41% Ni, 170ppm Cu, 350ppm Co, 6.8ppb Pt from 32m**
- **12m @ 0.32% Ni, 204ppm Cu, 337ppm Co, 8 ppb Pd from 37m (REAC272)**
- **8m @ 0.15% Ni, 400ppm Cu, 261ppm Co, 14.5ppb Pd, 14.5ppb Pt from 22m (REAC250)**

### Earlobe

- **6m @ 0.24% Ni, 53ppm Cu, 170ppm Co, from 52m (REAC230)**

### Sleeper

- **4m @ 0.16% Ni, 203ppm Cu, 301ppm Co from 44m (REAC320)**

(Refer to ASX release of 12 September 2013 for further details.)

The anomalous intervals occur at or near the base of weathering and may represent the chemical dispersion halo around a sulphide source (Figures 7 & 8). Disseminated sulphides were observed in end-of-hole samples in several drill holes.

The results are considered highly encouraging and demonstrate the potential for significant Ni-Cu-Co mineralisation associated with a discrete, 8km long unit within a mafic-ultramafic complex. Elevated palladium and platinum values are a further indication of the right setting for a magmatic nickel sulphide system.

Sheffield is currently undertaking detailed petrological and lithochemical studies on drill samples to better understand the bedrock geology of the Northern Targets area. These studies will include an appraisal of disseminated sulphides observed in several end-of-hole samples to determine if they are of magmatic origin. A comprehensive review of all exploration geochemical results over the Red Bull project is also underway. Results of this work are expected in Q4 2013.

Sheffield expects to commence further aircore drilling over the Northern Targets area in Q4 2013, subject to clearances and approvals.

Logging and sampling of 3 diamond holes that drilled conductor targets RBVA1-3 during July 2013 has been completed and assay results are pending. However, as previously reported, these holes intersected zones of graphite and/or pyrrhotite (iron sulphide) rather than copper or nickel sulphides (see ASX release of 17 July 2013).

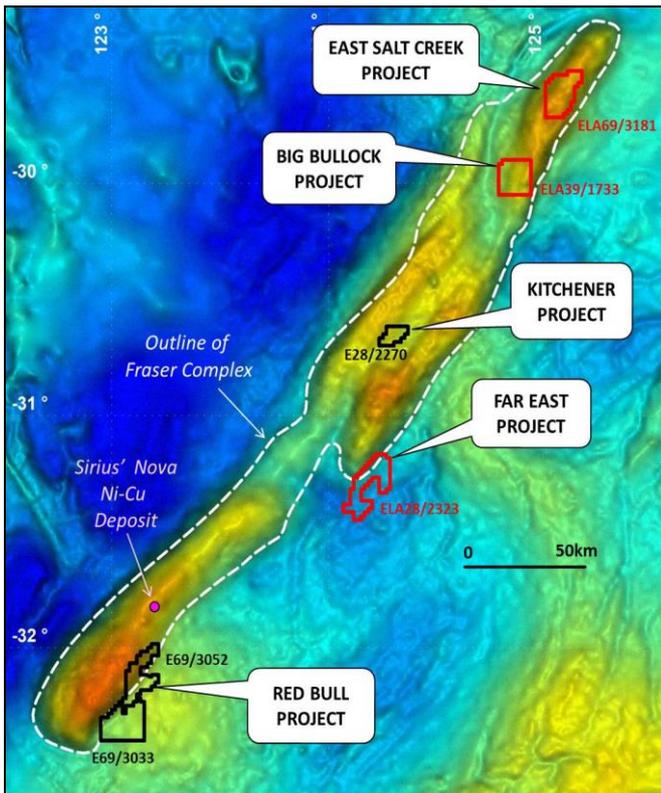


Figure 5: Location of Red Bull Project on gravity image

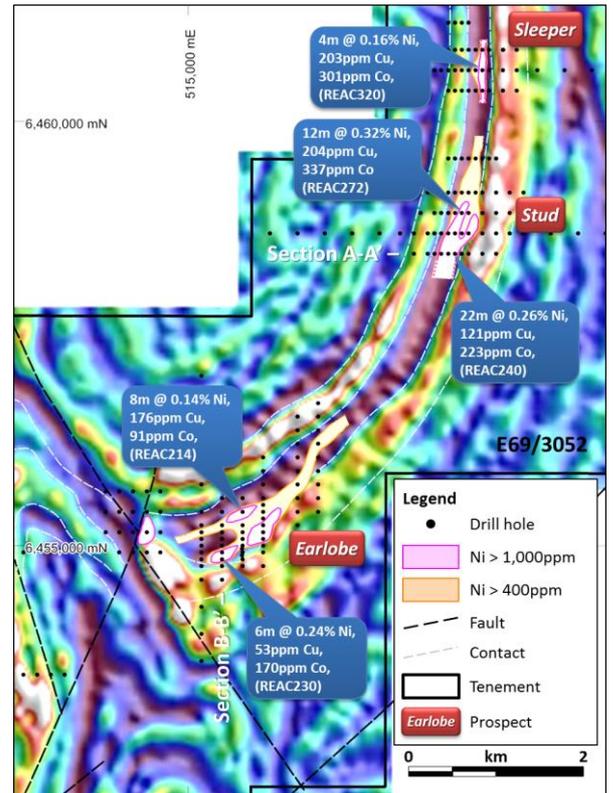


Figure 6: Northern Targets: end-of-hole nickel anomalies from aircore drilling on TMI magnetics

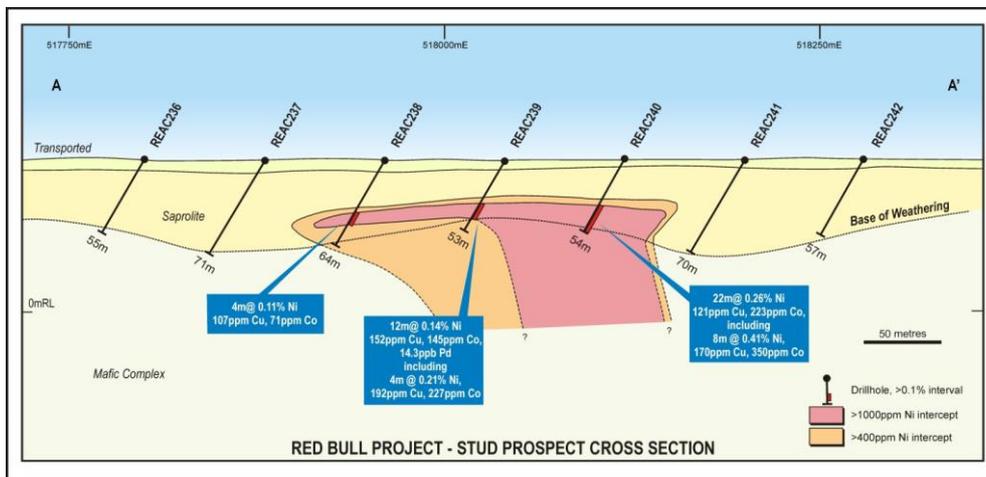


Figure 7: Section A-A', looking north

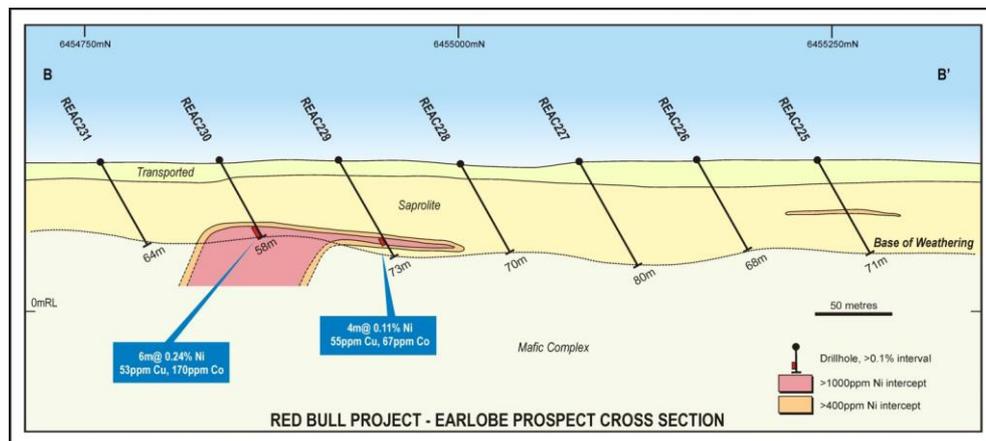


Figure 8: Section B-B', looking west

## PILBARA IRON

Following the sale of its South Pilbara iron tenements in Q2 2013 to Brockman Mining Limited (ASX:BCK, SEHK:159), Sheffield retains four granted exploration licences situated in the North Pilbara region (Figure 9). The tenements are all located near existing iron ore mines or major development projects and within potential trucking distance of Port Hedland. High grade outcropping iron mineralisation has been identified on two of the tenements.

During the quarter, Sheffield completed a helicopter-supported mapping and sampling programme on the Dead Bullock tenement E45/4029. A total of 47 rock chip samples were taken.

The assay results, received subsequent to the end of the quarter, define a significant new iron prospect named "Mt Vettel" which lies 150km from Port Hedland and just 20km to the west of Atlas Iron's (ASX:AGO) Mt Webber iron project.

The iron mineralisation at Mt Vettel occurs as high grade bedded iron mineralisation (BID) with some minor capping detrital iron mineralisation (DID). The mineralisation at surface is characterised by high iron grades and very low contaminant levels, particularly phosphorous.

The results of 37 samples of BID averaged:

**61.24 % Fe, 0.038% P, 0.98% Al<sub>2</sub>O<sub>3</sub>, 4.77% SiO<sub>2</sub>, 6.52% LOI**

(Refer to Table 1 and to ASX release of 23 October 2013 for further details.)

The results are extremely encouraging and highlight the potential for Mt Vettel to contain significant Direct Shipping Ore (DSO) located within trucking distance of Port Hedland.

The iron mineralisation at Mt Vettel is hosted within the Paddy Market Iron Formation which is known to contain several significant iron deposits in the Pilbara, including Atlas Iron's Mt Webber and Corunna Downs deposits (Figure 9). The Paddy Market Formation also hosts FMG's very large Glacier Valley magnetite deposit, located just 30km north of Mt Vettel.

Mapping and sampling has outlined a coherent zone of iron mineralisation outcropping over a total (folded) strike length of 1km with an average thickness of approximately 50m, varying between 15m and 130m in width (Figure 10).

The mineralisation is predominantly hematite-goethite BID with minor occurrences of overlying thin DID. A total of 40 samples were collected from the outcropping mineralisation. Of these, 37 samples were taken of BID mineralisation which returned an average grade of 61.24% Fe, with 36 samples returning grades above 55% Fe and to a maximum of 65.65% Fe. The BID mineralisation contains very low levels of contaminants P, Al<sub>2</sub>O<sub>3</sub> and SiO<sub>2</sub> (Table 1).

**Table 1: Mt Vettel Rock Chip Samples – averages for each mineralisation type**

Type	No. of samples	Fe%	SiO <sub>2</sub> %	Al <sub>2</sub> O <sub>3</sub> %	P%	LOI%
BID	37	61.24	4.77	0.98	0.038	6.52
DID	3	55.56	13.03	1.62	0.051	5.34
Magnetite	7	41.02	38.39	0.25	0.028	2.23

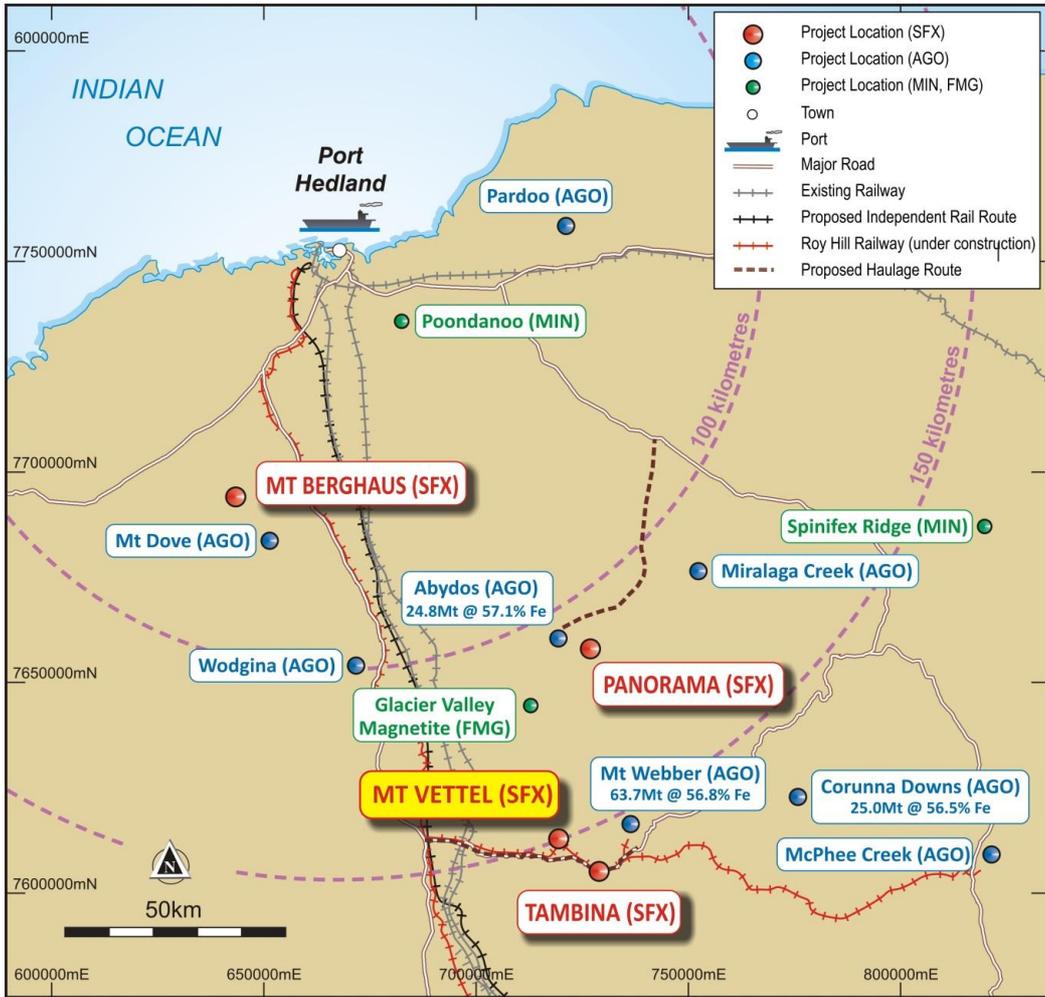


Figure 9: Location of Sheffield's North Pilbara Iron Projects

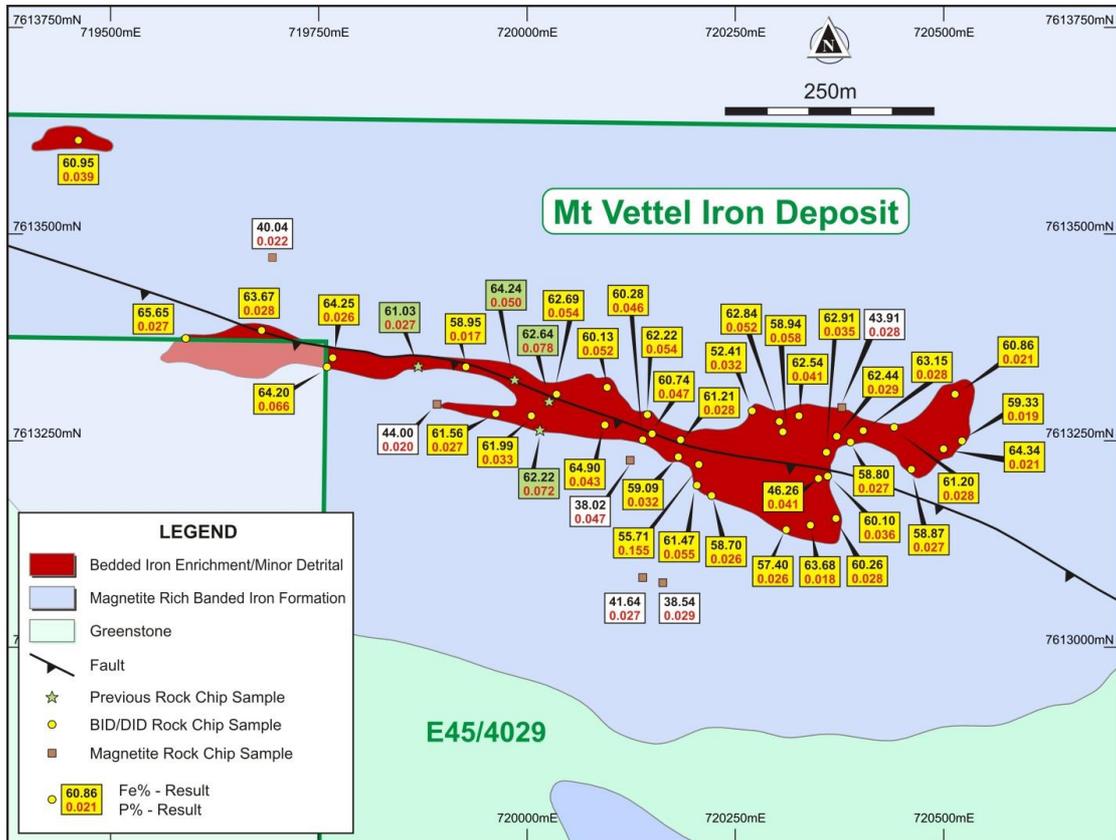


Figure 10: Mt Vettel – mapped iron enrichment and rock chip sample results

The Paddy Market Iron Formation surrounding the Mt Vettel DSO mineralisation is magnetite-bearing and the results of sampling and petrography indicate it has the potential to host a significant magnetite deposit.

A total of 7 samples were collected from magnetite-rich banded iron formation, returning an average iron grade of 41.02% Fe. Preliminary petrographic studies on samples collected from surface indicate that the magnetite has a medium to coarse grain size of between 50µm and 100µm and has been largely replaced by hematite with minor remaining accessory magnetite. The relatively coarse grainsize is considered a favourable attribute for grinding and liberation.

Detailed mapping and further sampling will be undertaken at Mt Vettel ahead of drilling scheduled for H1 2014. Further target generation work in the North Pilbara is planned for Q1 2014.

## ENEABBA HEAVY MINERAL SANDS

Sheffield's Eneabba HMS Project contains six advanced exploration prospects: West Mine North, Ellengail, Yandanooka, Durack, Drummond Crossing and Irwin (Figure 11). Sheffield's strategy is to develop multiple HMS deposits capable of supporting a sequential mining operation.

Subsequent to the end of the quarter, the Company announced a maiden Mineral Resource for the Drummond Crossing deposit of **52.2Mt @ 2.1% HM**, containing 1.07Mt HM (Indicated and Inferred) as summarized in Table 2, below.

**Table 2: Drummond Crossing prospect Mineral Resource (1.1% HM cut-off)<sup>1</sup>**

Resource Category	Mineral Resources					In-situ HM (Mt)*	Mineral Assemblage <sup>2</sup>			
	Material (Mt)*	Bulk Density	HM %	Slimes % <sup>3</sup>	Osize %		Zircon %	Rutile %	Leuc. %	Ilmenite %
Indicated	48.7	2.0	2.1	16	9	<b>1.02</b>	14	10	3.6	53
Inferred	3.5	2.0	1.5	16	8	<b>0.05</b>	13	10	2.8	55
<b>Total</b>	<b>52.2</b>	<b>2.0</b>	<b>2.1</b>	<b>16</b>	<b>9</b>	<b>1.07</b>	<b>14</b>	<b>10</b>	<b>3.5</b>	<b>53</b>

\*Tonnes have been rounded to reflect the relative uncertainty of the estimate.

<sup>1</sup> This estimate is classified and reported in a manner compliant with the JORC code and guidelines (JORC, 2004).

<sup>2</sup> The Mineral Assemblage is represented as the percentage of the Heavy Mineral (HM) component of the deposit, as determined by QEMSCAN. TiO<sub>2</sub> minerals defined according to the following ranges: Rutile >95% TiO<sub>2</sub>; Leucocoxene 85-95% TiO<sub>2</sub>; Ilmenite <55-85% TiO<sub>2</sub>.

<sup>3</sup> Reported below a 35% slimes upper cut-off.

The Drummond Crossing resource adds 150,000t of zircon, 107,000t of rutile, 570,000t of ilmenite and 38,000t of leucocoxene to Sheffield's Eneabba Project resource inventory which now stands at 6.8Mt of contained HM, of which 5.8Mt is valuable heavy mineral (Refer to Appendix 1 – resources tabulation).

Drummond Crossing is situated on cleared freehold farmland 5km from the Brand Highway, 20km north of Eneabba (Figure 11) and 120km by road from Geraldton Port. It is a dunal style HMS deposit occurring at surface on the Gingin escarpment. The resource is 4km long and up to 2.3km wide. Mineralisation extends from surface to depths of up to 30m, with an average thickness of 8m (Figures 12 & 13).

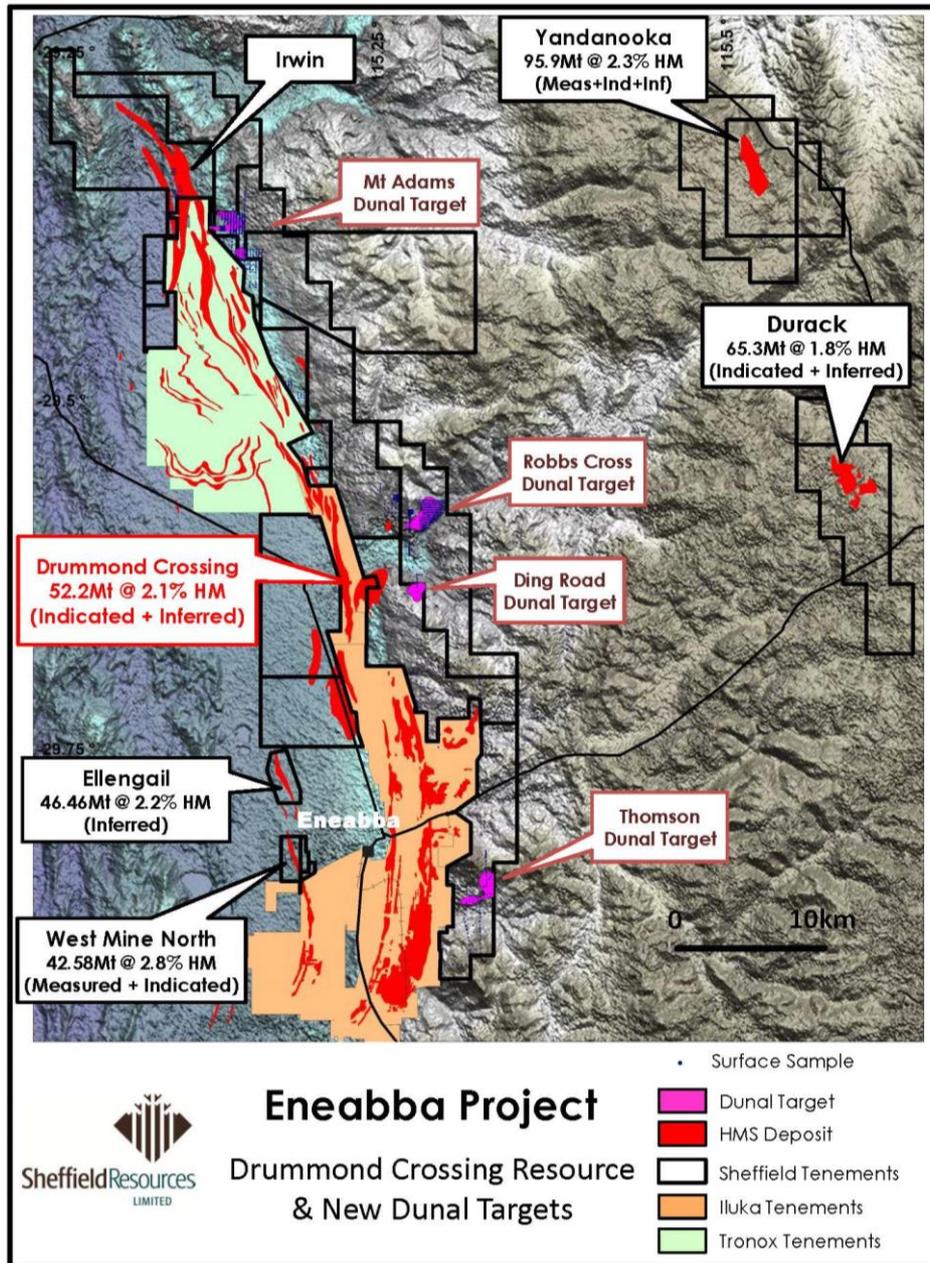


Figure 11: Location of Sheffield's HMS deposits in the Eneabba region

Drummond Crossing has an excellent mineral assemblage dominated by zircon (14%) and chloride ilmenite (53%), with a significant component of rutile (10%). Visual inspection of the heavy mineral concentrates show a majority of clean grains expected to respond well to conventional mineral processing techniques.

The Gingin Escarpment on which Drummond Crossing is situated is highly prospective for dunal-style HMS deposits and is underexplored to the north of Eneabba. Sheffield holds tenements over 50km strike of the Gingin Escarpment which it is actively exploring for dunal-style HM targets.

During the quarter, Sheffield completed a regional surface sampling programme designed to identify additional shallow to outcropping dunal HMS mineralisation. In total 676 surface samples were collected and analysed. The programme was successful in delineating four new exploration targets: Mt Adams, Robbs Cross, Ding Road and Thomsons (Figure 11). Full details of the sample results are contained in the Company's ASX release on 30 October 2013.

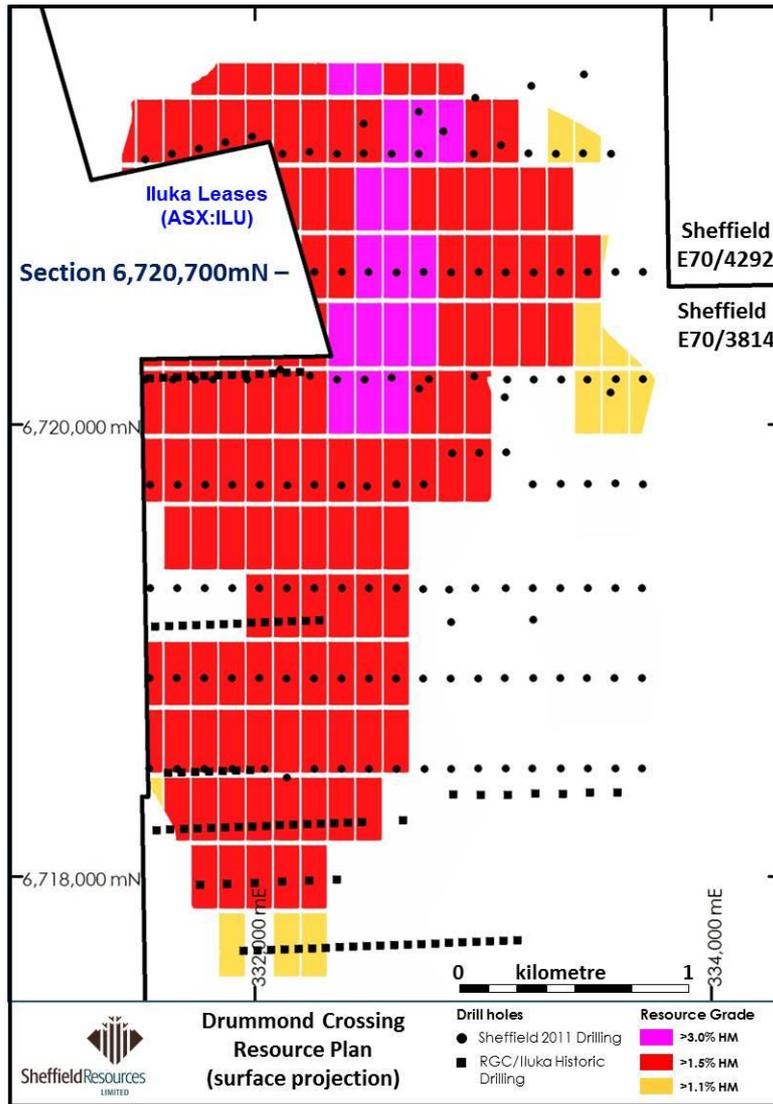


Figure 12: Drummond Crossing resource plan

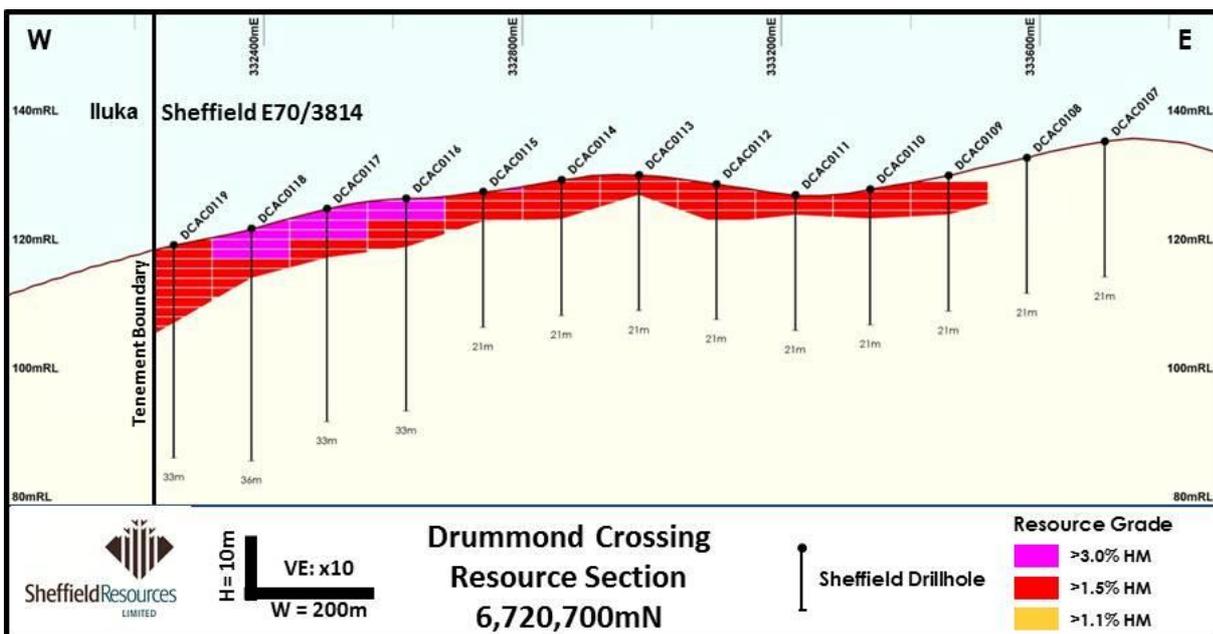


Figure 13: Drummond Crossing resource section 6,720,700mN, looking north

## OXLEY POTASH

The Oxley potash project is located near Three Springs in Western Australia's Mid-west region. Oxley potash is an unconventional, hard rock style of potash mineralisation, hosted by a series of ultrapotassic microsyenite lavas, which typically contain over 90% sanidine (potash) feldspar. Sheffield has pegged the entire 32km strike extent of the units within the northern part of the Moora Basin.

In the previous (June) quarter the company announced completion of a maiden RC and diamond drilling program at Oxley, co-funded by the State Government under its Exploration Incentive Scheme (EIS). Assay results from the RC drilling were also reported, with thick, high grade potash intervals received.

During this quarter the Company received assay results from the diamond drilling component of the programme. Mineralised intervals were consistent with those received from nearby RC drill holes, as follows:

- **17m @ 8.76% K<sub>2</sub>O from 19 to 36m (OXDD002)**, including **10m @ 10.8% K<sub>2</sub>O from 25m**,
- **14m @ 7.12% K<sub>2</sub>O from 71 to 85m (OXDD003B)**

(see Tables 3 & 4 below for drill hole details)

Hole OXDD001 is interpreted as intersecting a faulted offset of the mineralised unit, with no significant interval returned. OXDD003A encountered drilling difficulty and was terminated prior to reaching the target horizon.

Receipt of the diamond results has allowed Sheffield to begin preliminary metallurgical testwork to evaluate the process required to extract potassium from the sanidine feldspar to produce muriate of potash (MOP, KCl), or sulphate of potash (SOP, K<sub>2</sub>SO<sub>4</sub>) products for use in the fertiliser market. The testwork will also explore the potential to produce secondary products including iron, titanium and aluminium compounds.

Petrological and samples for multi-element geochemical analysis from RC and diamond drill holes have been selected and submitted for analysis as part of this study.

**Table 3: Oxley diamond drill hole details**

Hole ID	Tenement	East (m)	North (m)	AHDRL (m)	Hole Depth (m)	Inclination	Azimuth
OXDD001	E70/4318	387133.42	6768448.47	383.05	65.9	-70°	0°
OXDD002	E70/4318	386295.39	6768712.94	376.37	118.8	-70°	0°
OXDD003A	E70/4318	385445.48	6768532.78	366.86	32.9	-70°	0°
OXDD003B	E70/4318	385445.48	6768533.8	366.86	173.8	-70°	0°

Coordinates are referenced to the Map Grid of Australia (MGA) zone 50 on the Geographic Datum of Australia (GDA94), location determined by sub-mm accuracy RTK-GPS.

**Table 4: Significant drill results from the Oxley diamond drilling programme\***

Hole ID	Depth From (m)	Depth To (m)	Interval (m)	K <sub>2</sub> O (%)	Fe <sub>2</sub> O <sub>3</sub> (%)	Al <sub>2</sub> O <sub>3</sub> (%)	TiO <sub>2</sub> (%)	LOI (1000°)	MgO (%)	CaO (%)
<b>OXDD002</b>	19	36	17	8.76	14.33	15.01	1.86	1.90	1.63	0.33
<i>including</i>	25	35	10	10.77	14.85	15.93	2.03	1.19	1.40	0.39
<b>OXDD003B</b>	71	85	14	7.12	13.89	13.86	1.62	5.56	3.82	3.44
<b>OXDD001</b>	No significant interval									
<b>OXDD003A</b>	No significant interval									

\* Significant results determined from 1m sample intervals using a K<sub>2</sub>O cut-off of 6% and 3m internal dilution with a minimum reported width of 10m, *including* 1m sample intervals using a K<sub>2</sub>O cut-off of 9% and 3m internal dilution with a minimum reported width of 5m. Analysis details 1-3kg sample, XRF Phosphate Majors Package FB1/XRF55 + Cu (by Genalysis, Perth).

## **MCCALLS HEAVY MINERAL SANDS**

Heavy mineral sink fractions from samples assayed (and reported) in the previous quarter were logged, and will be composited for QEMSCAN mineral assemblage determination during Q4 2013.

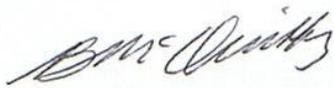
## **MOORA TALC**

No work was undertaken during the quarter.

## **CASH POSITION**

As at 30 September 2013, the Company had cash reserves of approximately \$5.3 million.

During Q4 2013, Sheffield may receive \$0.9 million from the exercise of 3 million 30c options with expiry 30 November 2013 and approximately \$1.2 million from its 2013 Research and Development tax return.



**Bruce McQuitty**  
Managing Director  
31 October 2013

#### **COMPETENT PERSONS' STATEMENT – EXPLORATION RESULTS**

The information in this report that relates to exploration results is based on information compiled by David Boyd. Mr Boyd is a full time employee of the Company. Mr Boyd is a Member of the Australasian Institute of Geoscientists and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and the activity to which they are undertaking to qualify as Competent Person as defined in the 2004 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves ("JORC Code")'. Mr Boyd consents to the inclusion in the report of the matters based on their information in the form and context in which it appears.

#### **COMPETENT PERSONS' STATEMENT – RESOURCE ESTIMATES**

The information in this report that relates to resource estimation is based on information compiled by Mr Trent Strickland. Mr Strickland is a full time employee of Quantitative Group (QG) and a Member of the Australasian Institute of Mining and Metallurgy (AusIMM). Mr Strickland has sufficient experience in the minerals industry to satisfy the requirements to act as the competent person for this estimate as defined in the 2004 Edition of the Australasian Code for Reporting of Mineral Resources and Ore Reserves. Mr Strickland consents to the inclusion in the report of the matters based on their information in the form and context in which it appears.

The information in this report that relates to reporting of resource and exploration results is based on information compiled under the guidance of Mark Teakle. Mr Teakle is an employee of the Company. Mr Teakle is a Member of the Australasian Institute of Geoscientists and the Australasian Institute of Mining and Metallurgy and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and the activity to which they are undertaking to qualify as Competent Person as defined in the 2004 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves ("JORC Code")'. Mr Teakle consents to the inclusion in the report of the matters based on their information in the form and context in which it appears.

#### **FORWARD LOOKING AND EXPLORATION TARGET STATEMENTS**

Some statements in this report regarding estimates or future events are forward-looking statements. They involve risk and uncertainties that could cause actual results to differ from estimated results. Forward-looking statements include, but are not limited to, statements concerning the Company's exploration programme, outlook, target sizes and mineralised material estimates. They include statements preceded by words such as "seek", "expected", "target", "scheduled", "intends", "potential", "prospective" and similar expressions.

The terms "Target" and "Exploration Target", where used in this report, should not be misunderstood or misconstrued as an estimate of Mineral Resources and Reserves as defined by the JORC Code (2004), and therefore the terms have not been used in this context. Exploration Targets are conceptual in nature and it is uncertain if further exploration or feasibility study will result in the determination of a Mineral Resource or Reserve.

## APPENDIX 1: MINERAL RESOURCES

**Table 1: Sheffield's contained Valuable HM (VHM) Resource inventory<sup>1</sup> at 30 October 2013**

Deposit	Resource Category	Zircon (kt)*	Rutile (kt)*	Leuc. (kt)*	Ilmenite (kt)*	Total VHM (kt)*
Thunderbird	Indicated	1,483	344	924	6,256	<b>9,007</b>
Thunderbird	Inferred	4,270	990	2,661	18,007	<b>25,927</b>
Yandanooka	Measured	13	2	3	87	<b>105</b>
Yandanooka	Indicated	240	81	83	1,439	<b>1,843</b>
Yandanooka	Inferred	4	1	2	23	<b>29</b>
Durack	Indicated	144	29	52	703	<b>928</b>
Durack	Inferred	26	5	13	121	<b>164</b>
Drummond Crossing	Indicated	143	101	37	542	<b>823</b>
Drummond Crossing	Inferred	7	5	1	28	<b>41</b>
Ellengail	Inferred	92	90	19	658	<b>859</b>
West Mine North	Measured	18	33	42	200	<b>293</b>
West Mine North	Indicated	71	87	46	506	<b>709</b>
McCalls	Inferred	3,491	1,063	2,576	42,911	<b>50,041</b>
Total	Measured	31	35	45	287	<b>398</b>
Total	Indicated	2,081	641	1,141	9,446	<b>13,310</b>
Total	Inferred	7,889	2,154	5,272	61,746	<b>77,062</b>
<b>Total</b>	<b>All</b>	<b>10,001</b>	<b>2,830</b>	<b>6,458</b>	<b>71,479</b>	<b>90,770</b>

\* Tonnes have been rounded to reflect the relative uncertainty of the estimates. <sup>1</sup> The contained HM tonnages shown in the Table above are sourced from Table 2, below.

**Table 2: Sheffield's HMS Mineral Resource<sup>2</sup> Inventory at 30 October 2013**

Project	Deposit	Resource Category	Cut-off (% HM) <sup>4</sup>	Material (Mt)*	Bulk Density	HM %	Slimes % <sup>4</sup>	Osize %	Insitu HM (Mt)*	Zircon %	Mineral Assemblage <sup>3</sup>		
											Rutile %	Leuc. %	Ilm. %
Dampier	Thunderbird	Indicated	2.0	299	2.1	7.2	19	14	21.5	6.9	1.6	4.3	29
	Thunderbird	Inferred	2.0	1,075	2.1	5.8	17	16	61.9	6.9	1.6	4.3	29
	<b>Total Dampier</b>	<b>All</b>	<b>2.0</b>	<b>1,374</b>	<b>2.1</b>	<b>6.1</b>	<b>17</b>	<b>15</b>	<b>83.4</b>	<b>6.9</b>	<b>1.6</b>	<b>4.3</b>	<b>29</b>
Eneabba	Yandanooka	Measured	0.9	2.9	2.0	4.1	15	14	0.12	10.6	1.9	2.2	72
	Yandanooka	Indicated	0.9	90.1	2.0	2.3	16	15	2.09	11.5	3.9	3.9	69
	Yandanooka	Inferred	0.9	2.8	2.0	1.2	18	21	0.03	11.2	3.9	4.6	68
	Yandanooka	All	0.9	95.9	2.0	2.3	16	15	2.25	11.4	3.8	3.9	69
	Durack	Indicated	0.9	50.3	2.0	2.0	15	21	1.02	14	2.8	5.1	69
	Durack	Inferred	0.9	15.0	1.9	1.2	14	17	0.18	14	2.5	7.2	66
	Durack	All	0.9	65.3	2.0	1.8	15	20	1.20	14	2.8	5.6	68
	Drummond Crossing	Indicated	1.1	48.7	2.0	2.1	16	9	1.02	14	10	3.6	53
	Drummond Crossing	Inferred	1.1	3.5	2.0	1.5	16	8	0.05	13	10	2.8	55
	Drummond Crossing	All	1.1	52.2	2.0	2.1	16	9	1.07	14	10	3.5	53
	Ellengail	Inferred	0.9	46.45	2.0	2.2	15.6	2.1	1.04	8.9	8.7	1.9	63.5
	Ellengail	All	0.9	46.45	2.0	2.2	15.6	2.1	1.04	8.9	8.7	1.9	63.5
	West Mine North	Measured	0.9	6.47	2.0	5.6	14.8	1.2	0.36	4.9	9.1	11.6	54.9
	West Mine North	Indicated	0.9	36.11	1.9	2.3	13.1	2.8	0.84	8.4	10.3	5.4	60.0
	West Mine North	All	0.9	42.58	1.9	2.8	13.4	2.5	1.21	7.9	10.1	6.4	59.2
	Total Eneabba	Measured	var.	9.4	2.0	5.2	15	5	0.48	6.7	6.8	8.7	60
	Total Eneabba	Indicated	var.	225.3	2.0	2.2	15	13	4.98	12.1	6.0	4.4	64
Total Eneabba	Inferred	var.	67.7	2.0	1.9	15	6	1.30	10.3	7.2	3.2	64	
<b>Total Eneabba</b>	<b>All</b>	<b>var.</b>	<b>302</b>	<b>2.0</b>	<b>2.2</b>	<b>15</b>	<b>11</b>	<b>6.76</b>	<b>11.6</b>	<b>6.3</b>	<b>4.2</b>	<b>64</b>	
McCalls	McCalls	Inferred	0.9	4,431	2.3	1.2	26.5	1.4	53	6.6	2.0	4.9	80.8
	<b>Total McCalls</b>	<b>All</b>	<b>0.9</b>	<b>4,431</b>	<b>2.3</b>	<b>1.2</b>	<b>26.5</b>	<b>1.4</b>	<b>53</b>	<b>6.6</b>	<b>2.0</b>	<b>4.9</b>	<b>80.8</b>

\*Tonnes have been rounded to reflect the relative uncertainty of the estimate.

<sup>2</sup> This estimate is classified and reported in a manner compliant with the JORC code and guidelines (JORC, 2004). Further details on the Mineral Resource at each deposit can be found in this document and on the ASX Announcements page of the Company's website. <sup>3</sup> The Mineral Assemblage is represented as the percentage of the Heavy Mineral (HM) component of the deposit, as determined by QEMSCAN. TiO<sub>2</sub> minerals defined according to the following ranges: Eneabba Project: Rutile >95% TiO<sub>2</sub>; Leucosene 85-95% TiO<sub>2</sub>; Ilmenite <55-85% TiO<sub>2</sub>; Dampier Project: Rutile >95% TiO<sub>2</sub>; Leucosene 70-95% TiO<sub>2</sub>; Ilmenite 40-70% TiO<sub>2</sub>. <sup>4</sup> West Mine North, Durack, Drummond Crossing and McCalls are reported below a 35% Slimes upper cutoff