

**ASX and Media Release** 

7 July, 2014

# LARGE BEDROCK CONDUCTOR IDENTIFIED AT RED BULL Ni-Cu PROJECT, FRASER RANGE

## **KEY POINTS**

- Strong bedrock conductor "RBD1" identified from ground EM surveys at Red Bull:
  - High conductance levels of 5,000-7,000+ Siemens, indicating potential for the geological source to be strongly sulphidic
  - $\circ$  Large areal extent of 350m x 1,200m, with moderate north-northeast plunge and depth to top of 550-600m
  - Similar dimensions and conductance levels to those of Sirius Resources' Conductor 1 (5,144 Siemens) as defined prior to discovery of Nova\*
  - Modelled conductive plate is discordant with the geological strike, making it a compelling drill target
- Several localised zones of strong polarisation/IP effect associated with aircore Ni anomalism at Stud prospect - potentially due to disseminated sulphides in bedrock
- Drilling to be undertaken immediately following receipt of approvals/permits

Sheffield Resources ("Sheffield", "the Company") (ASX:SFX) today announced results from high-powered Moving and Fixed Loop Transient Electromagnetic (MLTEM & FLTEM) ground geophysical surveys at its Red Bull Nickel-Copper Project. The Red Bull Project is within 20km of Sirius Resources NL's (ASX:SIR) Nova Nickel-Copper deposit, in the Fraser Range Nickel Province in Western Australia (Figure 4).





\*SIR ASX release 18 April 2012

The MLTEM survey was completed at the Earlobe and Stud prospects, where previous aircore drilling had identified significant Ni-Cu-Co anomalism associated with an interpreted mafic/ultramatic complex (see ASX release dated 11 February, 2014). The survey identified a broad, deep conductive anomaly immediately to the west of the Earlobe Prospect (**anomaly** "**RBD1**"), and several local zones of strong polarisation coincident with drillhole geochemical anomalies at the Stud prospect (Figure 2). A single FLTEM survey was then completed over RBD1 to better define the conductor and provide for more robust drill target design.

Sheffield's geophysical consultants have modelled the RBD1 conductive source as large (**350 x 1,200m**), striking WNW-ESE with moderate NNE plunge and a depth to top of about 550-600m. Conductance levels are high at **~5,000-7,000S+** indicating potential for the geological source to be strongly sulphidic.

RBD1 is located at the junction of three interpreted faults and Sheffield's main target mafic/ultramafic domain. Significantly, the modelled conductive plate is discordant to the geological strike, as interpreted from magnetic images.



Figure 2: Location of RBD1 conductor and Ch35 B-field Z component conductivity images from MLTEM surveys at Earlobe and Stud prospects, and selected drill intersections from previously reported aircore drilling

Managing Director, Bruce McQuitty said the RBD1 conductor was a compelling new target, with similar hallmarks to Sirius Resources' nearby Nova discovery.

"Although the target is deep, we are encouraged by the high conductance levels, large scale and favourable geological setting."

"This is a similar sized conductor, with similar conductance, to Sirius Resources' main Nova conductor."

"The IP anomalies at Stud are also encouraging, being located in an area of significant Ni-Cu-Co anomalism where disseminated nickel and copper sulphides have been observed in endof-hole aircore drill chips."

"Sheffield's value is underpinned by the world class Thunderbird mineral sands project, however we are well funded to continue the search for high value nickel targets in the Fraser Range and drilling of this target will be prioritised in our 2014 exploration program."

## Geophysical Survey Details

A total of 24 high powered (~80-100A) MLTEM survey lines were performed over two blocks (382 stations, 34.6kms) covering target areas at Stud and Earlobe where previous VTEM surveying had not been effective due to the presence of conductive overburden. In the western block a broad, deep late channel anomaly was defined in the MLTEM dataset. This was followed with FLTEM surveying to provide data for robust drill targeting.

## Conductor RBD1

Preliminary modelling and interpretation of the FLTEM follow-up surveying has been completed. Sheffield's geophysical consultant, Russell Mortimer of Southern Geoscience Consultants made the following comments:

"A total of 4 follow-up lines of high powered FLTEM (~120A) utilising a HT SQUID B-field sensor were completed at the RBD1 MLTEM target area, totalling 6.0 line kms of surveying (71 stations). Resultant data clearly highlighted the presence of a deep, highly conductive bedrock source adjacent to the area of geological interest. Decay curve analysis indicates that this **very strong anomaly** has a well-defined exponential decay fit in late channel data (CH38+, ~300msec range), with a high time constant (tau) estimate of >175msec.

Modelling has characterised the RBD1 conductive source as being of large areal size/extent (~350x1200m), striking ~WNW-ESE, having shallow-moderate N/NE dip/plunge (~25-35degrees) and situated at a depth to top of ~550-600m. Conductance levels are high at ~5,000-7,000S+ indicating that **there is a good possibility that the geological source is strongly sulphidic**. The associated bedrock conductor is situated adjacent to a major NW-SE structural boundary and the base of thickest/broadest section of layered mafic/ultramafic complex as defined by local aeromagnetic data and is situated in close proximity to recent anomalous aircore drilling results.

Overall, although deep, the strongly conductive bedrock source makes for a compelling "Nova" style target for priority drill testing. Without the use of high powered MLTEM/FLTEM surveying (~100A+) this significant target would not have been detected/defined."

## Stud Prospect IP/Chargeable Anomalies

The MLTEM grid over the Stud prospect did not identify any anomalous bedrock conductors; however it did identify three localised zones of induced polarisation (IP) anomalism. This is thought to have been a result of using the high-powered MLTEM system, and may be related to the presence of concentrations of disseminated sulphide in the bedrock.

The IP anomalies are in an area of significant Ni-Cu-Co anomalism identified from aircore drilling, with one anomaly coincident with hole REAC240 (5m @ 0.73% Ni, 168ppm Cu, 466ppm Co from 33m – see ASX release dated 11 February, 2013). Low concentrations of disseminated sulphide have also been identified in these areas from end-of-hole aircore sample petrology (see ASX release dated 27 November, 2013).

These anomalies will be further investigated with geophysical surveys followed by drill-testing.



Figure 3: Infill auger soil sampling location with anomalous Ni contours.

## **Auger Soil Sampling**

Sheffield recently completed an infill auger soil sampling program designed to better define Ni-Cu-Co anomalies identified from previous soil sampling programs (see ASX Release 27 November, 2013). In total 280 samples were collected to complete coverage of nominally 320m x 160m in areas where surface cover is interpreted to be thin, along the north-western tenement boundary (Figure 3, Table 1).

The program identified a number of anomalies, several of which are coincident with interpreted faults and magnetic trendlines, including along one of the faults coincident with the RBD1 Conductor. These anomalies will be considered for future drill testing.

## **Further Work**

Sheffield plans to drill the RBD1 conductor following receipt of necessary permits and approvals and as part of its proposed 2014 exploration program comprising further ground geophysical surveys and regional-scale aircore drilling.

Elsewhere in the Fraser Range, Sheffield has engaged a contractor to undertake a low level, 100m-spaced airborne magnetic and radiometric survey of its Big Bullocks project for target generation, this is expected to be completed during July.



Figure 4: Location of Red Bull Project and Sheffield's Fraser Range tenements

ends

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#### COMPLIANCE STATEMENTS

#### EXPLORATION RESULTS

The information in this report that relates to Exploration Results is based on information compiled by Mr David Boyd, a Competent Person who is a Member of Australian Institute of Geoscientists (AIG). Mr Boyd is a full-time employee of Sheffield Resources Ltd and has sufficient experience that is relevant to the styles of mineralisation and types of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Boyd consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

#### PREVIOUSLY REPORTED INFORMATION

This report includes information that relates to Exploration Results which were prepared and first disclosed under the JORC Code 2012. The information was extracted from the Company's previous ASX announcements as follows:

• Red Bull: "LARGE Ni-Cu-Co ANOMALIES IDENTIFIED IN THE FRASER RANGE", 11 February, 2014

This report also includes information that relates to Exploration Results which were prepared and first disclosed under the JORC Code 2004. The information has not been updated since to comply with the JORC Code 2012 on the basis that the information has not materially changed since it was last reported. The information was extracted from the Company's previous ASX announcements as follows:

• "AIRCORE DRILLING UNDERWAY AT RED BULL NICKEL PROJECT", 27 November 2013.

These announcements are available to view on Sheffield Resources Ltd's web site <u>www.sheffieldresources.com.au</u>.

The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcements and, in the case of estimates of Mineral Resources, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.

#### 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 "anticipated", "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 2012, 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.

## **ABOUT SHEFFIELD RESOURCES**

Sheffield Resources Limited (**Sheffield**) is a rapidly emerging heavy mineral sands (HMS) company.

ASX Code – SFX	Market Cap @ 82.5cps - \$110.4m
Issued shares – 133.8m*	Cash - \$11m (approx.)

\*Includes shares yet to be issued to directors who participated in recent placement

Sheffield's projects are all situated within the state of Western Australia and are 100% owned by the Company.

## **HEAVY MINERAL SANDS**

The Dampier project, located near Derby in WA's northwest, contains the large, high grade zircon-rich Thunderbird HMS deposit. Sheffield is targeting first production from Thunderbird in 2017.

The Eneabba project comprises multiple HMS deposits and is located near Eneabba approximately 140km south of the port of Geraldton in WA's Mid-West region.

Sheffield is also evaluating the large McCalls chloride ilmenite project, located 110km to the north of Perth.

## NICKEL-COPPER

Sheffield's Red Bull project is located in the highly prospective Fraser Complex within 20km of Sirius Resources NL's (ASX:SIR) Nova Ni-Cu deposit.

### IRON

Sheffield holds four exploration licences prospective for iron in the North Pilbara region, all near existing iron ore mine sites or major development projects and within potential trucking distance of Port Hedland. The recently discovered Mt Vettel DSO deposit is the Company's current exploration focus in this region.

## POTASH

The Oxley potash project is located in the northern part of the Proterozoic Moora Basin, approximately 38km northeast of Three Springs. Sheffield is exploring the Oxley Potash project for unconventional hard rock potash mineralisation suitable for open pit mining.

El a mara de la	11	Datastian		Count Min			Perc	entile		
Element	Units	Detection	Method*	Count	Min	Max	75 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	98 <sup>th</sup>
Ni	ppm	0.5	4A/MS	280	10.1	226.6	41.3	52.0	60.8	73.1
Cu	ppm	0.5	4A/MS	280	12.4	124.0	27.8	31.7	36.9	47.5
Co	ppm	0.1	4A/MS	280	3.9	43.5	17.3	22.7	28.8	35.1
Ag	ppm	0.1	4A/MS	280	0.1	0.3	0.1	0.1	0.2	0.2
Al	ppm	50	4A/OE	280	13,985	101,916	52,503	62,811	73,403	82,321
As	ppm	0.5	4A/MS	280	1.0	96.5	9.6	13.7	16.6	42.1
Aυ	ppb	1	ARU10/MS	280	1	16	4	6	7	8
Au-Rp1	ppb	1	ARU10/GF	3	10	15	15	15	15	15
Ba	ppm	1	4A/MS	280	70	1,097	313	369	400	505
Be	ppm	0.05	4A/MS	280	0.16	1.40	0.70	0.89	0.98	1.11
Bi	ppm	0.01	4A/MS	280	0.02	0.20	0.11	0.13	0.15	0.17
Са	ppm	50	4A/OE	280	4,844	167,261	107,672	129,629	144,378	154,096
Cd	ppm	0.02	4A/MS	280	0.01	0.17	0.07	0.09	0.10	0.11
Cr	ppm	1	4A/OE	280	16	349	99	130	147	172
Cs	ppm	0.05	4A/MS	280	0.20	7.26	1.26	1.56	1.82	2.07
Fe	ppm	100	4A/OE	280	12,534	142,475	55,192	69,357	78,825	96,726
Ga	ppm	0.1	4A/MS	280	2.8	21.5	12.6	15.3	16.5	18.0
Ge	ppm	0.1	4A/MS	280	0.3	1.6	1.0	1.2	1.3	1.5
Hf	ppm	0.05	4A/MS	280	0.34	4.15	1.38	1.66	1.88	2.04
In	ppm	0.05	4A/MS	280	0.03	0.13	0.03	0.06	0.07	0.08
K	ppm	20	4A/OE	280	1,327	13,058	8,727	10,594	11,391	12,024
Li	ppm	0.1	4A/MS	280	4.5	44.2	18.5	21.9	23.9	26.8
Mg	ppm	20	4A/OE	280	1,446	113,743	44,590	61,625	68,865	74,527
Mn	ppm	1	4A/OE	280	121	1,463	536	693	837	1,197
Мо	ppm	0.1	4A/MS	280	0.2	4.2	0.9	1.2	1.5	1.8
Na	ppm	20	4A/OE	280	1,442	26,296	6,857	8,794	12,325	15,767
Nb	ppm	0.1	4A/MS	280	1.5	13.2	9.2	10.5	11.4	12.4
Р	ppm	50	4A/OE	280	25	471	84	116	156	226
Pb	ppm	0.5	4A/MS	280	2.3	17.1	10.3	12.4	13.5	14.3
Pt	ppb	5	ARU10/MS	280	3	3	3	3	3	3
Rb	ppm	0.1	4A/MS	280	4.0	47.4	28.8	34.4	38.4	43.7
Re	ppm	0.05	4A/MS	280	0.03	0.03	0.03	0.03	0.03	0.03
S	ppm	50	4A/OE	280	25	7,871	556	752	850	1,689
Sb	ppm	0.05	4A/MS	280	0.03	0.84	0.29	0.37	0.45	0.62
Sc	ppm	1	4A/OE	280	3	35	15	20	23	32
Se	ppm	2	4A/MS	280	1	6	1	1	1	1
Sn	ppm	0.1	4A/MS	280	0.4	2.5	1.1	1.3	1.4	1.5
Sr	ppm	0.5	4A/MS	280	49.1	1,323.2	574.3	729.0	817.4	926.7
Ta	ppm	0.05	4A/MS	280	0.09	2.02	0.65	0.78	0.85	0.90
Те	ppm	0.1	4A/MS	280	0.1	0.2	0.1	0.1	0.1	0.1
Th	ppm	0.01	4A/MS	280	0.69	10.61	5.54	6.74	7.28	8.00
Ti	ppm	5	4A/OE	280	1,974	14,135	9,333	10,970	11,896	13,114
TI	ppm	0.02	4A/MS	280	0.03	0.29	0.18	0.21	0.24	0.26
U	ppm	0.01	4A/MS	280	0.12	5.60	2.47	3.51	4.28	5.20
V	ppm	1	4A/OE	280	37	385	162	202	232	276
W	ppm	0.1	4A/MS	280	0.3	2.1	0.9	1.0	1.0	1.3
Y	ppm	0.05	4A/MS	280	2.58	36.30	13.55	17.74	21.95	27.46
Zn	ppm	1	4A/OE	280	6	79	35	43	50	58
Zr	ppm	0.1	4A/MS	280	10.0	145.6	47.0	56.9	63.9	71.9
		+: APU10" 10c								

Appendix 1: Auger soil sample assay statistics.

\* 4A: four-acid digest; ARU10" 10g aqua-regia digest; GF: graphite furnace finish; MS: inductively coupled mass spectrometry finish; OES: inductively coupled optical emission spectrometry finish.

# Appendix 2 Auger Sample Locations (MGA Zone 51 GDA94, AHD).

Sample_ID	Easting	Northing	RL	Carbonate Geology	Sample_ID	Easting	Northing	RL	Carbonate Geology
SSO2657	507926	6451161	290.9	7 QSC;	SSO2745	507178	6448278	271.6	
SSO2658	508062	6451095	293.1	7 QSC;	SSO2746	506903	6448433	271	5 QSC;
SSO2659	508200	6451004	300.6	7 QSC;	SSO2747	506330	6448402	269.3	5 QSC;
SSO2660	508336	6450920	291.6	5 QSC;	SSO2748	506466	6448322	271.4	7 QSC;
SSO2661	508471	6450853	285.2	5 QSC;	SSO2749	506600	6448238	269.9	5 QSC;
SSO2662	508616	6450777	292.6	5 QSC;	SSO2750	506737	6448150	271.7	
SSO2663	508751	6450684	285.2	5 QSC;	SSO2751	506879	6448067	267.1	5 QSC;
SSO2664	508894	6450599	281.5	5 QSC;	SSO2752	507016	6448000	273.9	
SSO2665	509030	6450519	282	5 QSC; Clays;	SSO2753	507151	6447906	271.5	5 QSC;
SSO2666	509167	6450447	288.8	7 QSC;	SSO2754	507276	6447843	277.1	5 QSC;
SSO2667	509300	6450372	279.3	7 QSC;	SSO2755	507436	6447743	278.3	5 QSC;
SSO2668	509595	6450562	288.8	7 QSC;	SSO2756	507570	6447675	284.1	5 QSC;
SSO2669	509325	6450736	279.4	5 QSC; Clays;	SSO2757	507708	6447599	284.2	7 QSC;
SSO2670	509051	6450888	284.3	5 QSC; Clays;	SSO2758	507125	6447570	272.8	1 QSC;
SSO2671	508769	6451045	278.3	7 QSC; Clays;	SSO2759	506856	6447725	270.2	5 QSC;
SSO2672	508490	6451180	309.1	5 QSC; Clays;	SSO2760	506578	6447880	268.6	
			292.6						
SSO2673	508223	6451366		7 QSC; Clays;	SSO2761	506305	6448052	273.1	7 QSC;
SSO2674	507938	6451524	312.1	7 QSC;	SSO2762	506834	6447367	270.8	
SSO2675	507958	6451887	286.4	5 QSC;	SSO2763	506538	6447166	267.9	5 QSC;
SSO2676	508091	6451797	298.9	7 QSC;	SSO2764	506377	6446880	270.3	5 QSC;
SSO2677	508236	6451720	296.9	7 QSC;	SSO2765	506526	6446801	269.1	5 QSC;
SSO2678	508381	6451633	296.2	5 QSC; Clays;	SSO2766	511163	6452980	262	
SSO2679	508526	6451566	305.3	5 QSC; Clays;	SSO2767	511037	6453066	271.5	5 QSC;
SSO2680	508657	6451480	298.9	5 QSC; Clays;	SSO2768	511323	6452905	262.2	5 QSC; Clays;
SSO2681	508796	6451405	291.2	7 QSC; Clays;	SSO2769	511492	6453176	206.3	7 QSC;
	508929					511452			
SSO2682		6451325	289.4	7 QSC;	SSO2770		6453336	263.3	
SSO2683	509068	6451247	291.1	7 QSC;	SSO2771	511094	6453775	267.7	
SSO2684	509198	6451160	288.8	7 QSC;	SSO2772	511228	6453691	266.7	7 QSC;
SSO2685	509347	6451084	287	7 QSC;	SSO2773	511364	6453609	265.2	5 QSC;
SSO2685	509489		285.6			511504		265	5 QSC;
		6451004		5 QSC; Clays;	SSO2774		6453531		
SSO2687	509617	6450926	286.9	5 QSC; Clays;	SSO2775	511502	6453897	294.5	
SSO2688	509766	6450848	282.8	5 QSC; Clays;	SSO2776	511137	6454491	278.1	5 QSC;
SSO2689	509927	6451128	281.9	5 QSC; Clays;	SSO2777	511268	6454415	267.6	5 QSC; Clays;
SSO2690	509659	6451290	275.3	5 QSC; Clays;	SSO2778	511405	6454328	274.9	5 QSC; Clays;
SSO2691	509370	6451440	285.1	7 QSC;	SSO2779	511550	6454246	270.3	5 QSC;
SSO2692	509085	6451606	289	7 QSC;	SSO2780	511685	6454163	272.9	5 QSC;
SSO2693	508816	6451762	295.5	5 QSC; Clays;	SSO2781	511816	6454086	266.4	5 QSC;
SSO2694	508535	6451924	301.2	5 QSC; Clays;	SSO2782	512004	6454716	273.8	5 QSC;
			304.4						
SSO2695	508265	6452098		5 QSC; Clays;	SSO2783	511868	6454796	275.8	
SSO2696	508830	6452117	302.2	5 QSC; Clays;	SSO2784	511728	6454887	269.9	7 QSC;
SSO2697	508975	6452039	296.5	5 QSC; Clays;	SSO2785	511594	6454962	271	7 QSC;
SSO2698	509127	6451962	294.3	7 QSC;	SSO2786	511453	6455047	266.9	5 QSC;
SSO2699	509254	6451881	296.6	7 QSC;	SSO2787	511357	6455117	268.8	
SSO2700	509394	6451798	295.9	7 QSC;	SSO2788	511201	6455174	266.9	5 QSC;
SSO2701	509535	6451713	288.9	7 QSC;	SSO2789	511037	6455281	266.6	5 QSC;
SSO2702	509671	6451637	291.7	7 QSC;	SSO2790	511068	6455642	284.2	5 QSC;
SSO2703	509816	6451564	282.9	7 QSC;	SSO2791	511344	6455484	269.6	
SSO2704	509959	6451466	281.6	7 QSC;	SSO2792	511611	6455321	259.4	
SSO2705	510079	6451403	278.5	7 QSC;	SSO2793	511886	6455160	264.9	7 QSC;
SSO2706	510224	6451317	278.1	5 QSC;	SSO2794	512170	6455005	254.7	7 QSC;
SSO2707	510258	6451671	273	5 QSC;	SSO2795	512301	6455270	273.1	
SSO2708	509971	6451829	279.6	5 QSC;	SSO2796	512180	6455361	265.4	
SSO2709	509695	6452011	284.9	5 QSC;	SSO2797	512048	6455441	264	7 QSC;
SSO2710	509416	6452153	291.7	5 QSC; LAT;	SSO2798	511911	6455516	265.4	7 QSC;
SSO2711	510120	6452117	275.7	5 QSC; LAT;	SSO2799	511781	6455595	264.9	5 QSC; Clays;
					SSO2800				
SSO2712	510268	6452029	270.1	7 QSC;		511637	6455674	263.4	
SSO2713	510397	6451947	271.9	7 QSC;	SSO2801	511481	6455756	274.9	
SSO2714	510543	6451860	266.8	7 QSC;	SSO2802	511358	6455836	266.5	5 QSC; Clays;
SSO2715	510683	6451785	264.2	7 QSC;	SSO2803	512216	6455720	258.1	
SSO2716	510837	6452068	262.3	7 QSC;	SSO2804	512491	6455549	265.9	1 1 1 1 1
SSO2717	508586	6450398	278	7 QSC;	SSO2805	512640	6455839	261.7	
SSO2718	509151	6450088	279.5	5 QSC;	SSO2806	512779	6455755	249.8	
SSO2719	508982	6449824	275.1	5 QSC;	SSO2807	512924	6455672	260.5	7 QSC;
SSO2720	508843	6449901	276.7	5 QSC; Clays;	SSO2808	513058	6455586	263.3	
SSO2721	508713	6449973	274.1	7 QSC; Clays;	SSO2809	513202	6455500	253.4	
SSO2722	508572	6450046	270.7	5 QSC; Clays;	SSO2810	513337	6455436	251.2	
SSO2723	508432	6450131	268	5 QSC; Clays;	SSO2811	513474	6455340	252.5	
SSO2724	508286	6450216	270.8	7 QSC;	SSO2812	513620	6455274	261.4	7 QSC;
SSO2725	508153	6450293	276	7 QSC;	SSO2813	513939	6455828	240.7	
SSO2726	508010	6450381	278.4	7 QSC;	SSO2813	513808	6455908	252.3	
SSO2727	507877	6450445	282.6	7 QSC;	SSO2815	513662	6455984	247.8	
SSO2728	508134	6449935	273.6	5 QSC; Clays;	SSO2816	513521	6456062	248	5 QSC; Clays;
SSO2729	508406	6449779	275.3	5 QSC; Clays;	SSO2817	513387	6456148	252.3	1 1 1 1 1
SSO27230	508690	6449631	279.2	5 QSC; Clays;	SSO2818	513345	6456234	252.5	
SSO2731	508522	6449354	277.2	5 QSC; Clays;	SSO2819	513106	6456307	250.9	
SSO2732	508389	6449418	277	5 QSC; Clays;	SSO2820	512967	6456381	248.2	7 QSC;
SSO2733	508254	6449502	275.2	5 QSC; Clays;	SSO2821	512822	6456469	260	
SSO2734	508109	6449592	275.3	5 QSC; Clays;	SSO2822	512686	6456544	257.2	
SSO2735	507971	6449665	273.2	5 QSC; Clays;	SSO2823	512848	6456822	246.7	
SSO2736	508078	6449224	270.7	7 QSC;	SSO2824	513128	6456659	254.1	7 QSC;
SSO2737	508373	6449053	284.3	5 QSC;	SSO2825	513394	6456505	268.2	
SSO2738	508072	6448869	295.2	7 QSC;	SSO2826	513680	6456312	249.9	
SSO2739	507932	6448941	278.7	5 QSC;	SSO2827	513958	6456186	240.4	5 QSC;
SSO2740	507617	6448384	281.9	5 QSC;	SSO2828	514260	6456743	270.4	5 QSC;
SSO2741	507743	6448315	268.7	7 QSC;	SSO2829	514011	6456911	254.4	
		6448237		7 QSC;	SSO2829	514011	6456911	254.4	
		n44X/37	281.6	/ UNC'	5507830		- p/15/(1/0	. 25/1	5 UNC (Tave)
SSO2742	507898								
SSO2742 SSO2743	507898	6447954	280.5	7 QSC;	SSO2830	513448	6457226	260.4	

					. ·					. ·
		orthing RI			Sample_ID		Northing R		onate	Geology
SSO2833	512888	6457544	276.1	1 QSC; LAT;	SSO2921	517466	6459696	253.2		QSC; Clays;
SSO2834	512631	6457694	296.5	1 QSC; LAT;	SSO2922	517602	6459622	255.4		QSC; Clays;
SSO2835	512602	6457345	267.5	5 Clays;	SSO2923	517743	6459545	255.5	5	QSC; Clays;
SSO2836	512734	6457256	268.2	5 QSC; Clays;	SSO2924	517785	6460259	268.6	7	QSC;
SSO2837	512863	6457218	269.5	7 QSC; Clays;	SSO2925	517647	6460341	268.8	1	QSF;
SSO2838	513000	6457110	264.1	7 QSC;	SSO2926	517509	6460416	269.8		QSF;
SSO2839	513149	6457014	258.6	5 QSC; Clays;	SSO2927	517363	6460498	275.7		QSF;
SSO2840	513282	6456954	254.7	5 QSC; Clays;	SSO2928	517401	6460845	284.8	1	
SSO2841	513424	6456874	254.7	7 QSC; Clays;	SSO2929	517676	6460692	277.2	1	
SSO2842	513565	6456761	263.4	7 QSC; Clays;	SSO2930	517947	6460534	271	5	QSC;
SSO2843	513693	6456705	249.9	5 QSC; Clays;	SSO2931	517968	6460888	279.5	7	QSC;
SSO2844	513840	6456623	254.2	5 QSC; Clays;	SSO2932	517830	6460963	277	7	QSC;
SSO2845	513978	6456556	262.7	5 QSC;	SSO2933	517686	6461045	282.4	5	QSC; Clays;
SSO2846	514117	6456470	258	7 QSC;	SSO2934	517550	6461122	283	5	
SSO2847	514259	6456399	264.1	7 QSC;	SSO2935	517415	6461211	286.4		QSC;
SSO2848	514715	6456861	263.6	7 QSC;	SSO2936	517984	6461248	282.4	5	QSC; Clays;
SSO2849	514572	6456927	258.7	7 QSC;						
SSO2850	514439	6457011	265.3	7 QSC;						
SSO2851	514298	6457084	270.4	7 QSC;						
SSO2852	514157	6457167	262.4	7 QSC;						
SSO2853	514011	6457243	269.7	5 QSC;						
SSO2854	513882	6457341	267.5	5 QSC;						
SSO2855	513735	6457415	261.4	7 QSC;						
SSO2856	513606	6457483	261.1	5 QSC;						
SSO2857	513458	6457600	262.1	5 QSC;						
SSO2858	513319	6457653	270	5 QSC; Clays; TRANS L	.AT;					
SSO2859	514618	6457642	288.1	5 QSC; QSS;						
SSO2860	514754	6457571	279.6	1 QSC; QSS;						
SSO2861	514903	6457510	275.3	5 QSC;						
SSO2862	515198	6457687	274.8	5 QSC; SUBCROP;						
SSO2863	515469	6457532	275.9	5 QSC;						
SSO2863		6457374								
	515753		271.6	5 QSC;						
SSO2865	516019	6457186	264.2	5 QSC;		-				
SSO2866	516304	6457041	261.5	5 QSC; Clays;						
SSO2867	516575	6456891	258.9	5 QSC; Clays;						
SSO2868	516734	6457161	256.2	7 QSC;						
SSO2869	516612	6457247	272.2	5 QSC; Clays;						
SSO2870	516469	6457319	262.3	5 QSC; Clays;						
SSO2871	516328	6457393	266.2	5 QSC; Clays;						
SSO2872	516185	6457478	264.4	5 QSC; Clays;						
SSO2873	516050	6457561	269.3	5 QSC; Clays;						
SSO2874	515902	6457649	271.5	5 QSC; Clays;						
SSO2875	515772	6457715	276.3	5 QSC; Clays;						
SSO2876	515785	6458083	278.5	7 QSC;						
SSO2877	516091	6457937	269.9	7 QSC;						
SSO2878	516347	6457759	260.6	5 QSC;						
SSO2879	516622	6457605	260	5 QSC; Clays;						
SSO2880	516892	6457456	257.6	5 QSC; Clays;						
SSO2881	517051									
		6457728	264.8	5 QSC; Clays;						
SSO2882	516930	6457790	262.7	5 QSC; Clays;						
SSO2883	516784	6457881	267.4	5 QSC; Clays;						
SSO2884	516646	6457958	266.9	5 QSC; SUBCROP;						
SSO2885	516506	6458039	269.8	5 QSC; Clays; SUBCRC	DP;					
SSO2886	516358	6458109	274.9	5 QSC; Clays;						
SSO2887	516228	6458206	275.5	5 QSC; Clays;						
SSO2888	516091	6458278	278.5	5 QSC; Clays;						
SSO2889	515952	6458353	282.8	5 QSC;						
SSO2889 SSO2890	515952	6458353	282.8	7 QSC;						
SSO2891	515856	6459149	291.3	7 QSC;		-				
SSO2892	515994	6459072	287.6	5 QSC;						
SSO2893	516128	6458988	287.9	1 QSC; SUBCROP;						
SSO2894	516138	6458938	287.6	1 QSC; SUBCROP;						
SSO2895	516270	6458911	284.2	1 QSC; SUBCROP;						
SSO2896	516410	6458823	287.9	1 QSC; SUBCROP;						
SSO2897	516553	6458741	286.2	5 QSC;						
SSO2898	516685	6458672	282.4	5 QSC;						
SSO2898	516839	6458596	264.6							
				7 QSC;						
SSO2900	516961	6458511	260.6	1 QSF;		-				
SSO2901	517109	6458419	259.4	5 QSF;						
SSO2902	517243	6458352	258.9	5 QSC; Clays;						
SSO2903	517403	6458630	266.4	7 QSC;						
SSO2904	517267	6458716	257.9	1 QSF;						
SSO2905	516979	6458869	264.2	7 QSC;						
SSO2906	516696	6459035	277.8	5 QSC;						
SSO2900	516435	6459185	267.8							
				5 QSF;						
SSO2908	516146	6459347	269.1	5 QSC;						
SSO2909	515881	6459489	272.9	5 QSC;						
SSO2910	516465	6459525	234.2	1 QSS;						
SSO2911	516591	6459471	266.6	5 QSS;						
SSO2912	516734	6459383	274.2	5 QSC;						
SSO2912	516865	6459304	276.3	5 QSC;						
SSO2913	517001	6459219	268.2							
				5 QSC;						
SSO2915	517153	6459139	271.7	5 QSC;						
SSO2916	517282	6459067	265.5	5 QSC;						
SSO2917	517423	6458985	263.3	7 QSC;						
SSO2918	517578	6459258	264.7	5 QSC;						
3302918										
SSO2918	517321	6459420	268.5	5 QSC;						

# Appendix 3: JORC (2012) Table 1 Report, Red Bull Geophysics & Auger Soil Results, 7 July 2014.

## Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	<ul> <li>Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.</li> <li>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</li> <li>Aspects of the determination of mineralisation that are Material to the Public Report.</li> <li>In cases where 'industry standard' work has been done this would be relatively simple (e.g. 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g. submarine nodules) may warrant disclosure of detailed information.</li> </ul>	<ul> <li>Auger soil samples taken as a scoop from the material pile lifted to surface by a rotary (machine) auger.</li> <li>Sample collected from 0.3m to 1m below surface, 200-300g collected in a numbered sample bag.</li> </ul>
Drilling techniques	<ul> <li>Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).</li> </ul>	<ul> <li>Auger (machine) sampling with 100mm helical auger.</li> </ul>
Drill sample recovery	<ul> <li>Method of recording and assessing core and chip sample recoveries and results assessed.</li> <li>Measures taken to maximise sample recovery and ensure representative nature of the samples.</li> <li>Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.</li> </ul>	<ul> <li>Open hole, scoop sample considered suitable for regional soil geochemical studies.</li> </ul>
Logging	<ul> <li>Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.</li> <li>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</li> <li>The total length and percentage of the relevant intersections logged.</li> </ul>	<ul> <li>Samples logged at the sample site with qualitative scale of carbonate assessed after application of hydrochloric acid and material type (alluvium, colluvium, subcrop, laterite etc.) recorded.</li> </ul>
Sub-sampling techniques and sample	<ul> <li>If core, whether cut or sawn and whether quarter, half or all core taken.</li> <li>If non-core, whether riffled, tube sampled,</li> </ul>	<ul> <li>Scoop sample from lifted material.</li> <li>No duplicate or other measures taken to ensure representivity.</li> </ul>

Criteria	JORC Code explanation	Commentary
preparation	<ul> <li>rotary split, etc and whether sampled wet or dry.</li> <li>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> <li>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</li> <li>Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.</li> <li>Whether sample sizes are appropriate to the grain size of the material being sampled.</li> </ul>	<ul> <li>Industry standard method considered suitable for regional soil geochemical studies.</li> </ul>
Quality of assay data and laboratory tests	<ul> <li>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</li> <li>For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.</li> <li>Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.</li> </ul>	<ul> <li>Entire sample pulverised and sub-sample split taken for assay.</li> <li>Au, Pt assayed by aqua-regia digest with ICP-MS determination.</li> <li>Other elements assayed by 4-acid digest (considered near-total) with ICP-MS or ICP-OES determination.</li> <li>Internal laboratory standards assessed as appropriate.</li> <li>Industry standard techniques and processes considered suitable for regional soil geochemical studies.</li> </ul>
Verification of sampling and assaying	<ul> <li>The verification of significant intersections by either independent or alternative company personnel.</li> <li>The use of twinned holes.</li> <li>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</li> <li>Discuss any adjustment to assay data.</li> </ul>	<ul> <li>Data analysed and reviewed by senior Company personnel prior to release.</li> <li>Data is logged electronically at the sample site.</li> <li>Documentation related to data custody and validation are maintained on the Company's' server.</li> <li>No assay data have been adjusted.</li> </ul>
Location of data points	<ul> <li>Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.</li> <li>Specification of the grid system used.</li> <li>Quality and adequacy of topographic control.</li> </ul>	<ul> <li>Sample sites were located using a GPS system with expected accuracy of +/- 5m horizontal and +/- 10m vertical.</li> </ul>
Data spacing and distribution	<ul> <li>Data spacing for reporting of Exploration Results.</li> <li>Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.</li> <li>Whether sample compositing has been applied.</li> </ul>	<ul> <li>Nominal spacing of 320m x 160m, see figure in body of announcement for sample grid.</li> </ul>
Orientation of data in relation to geological	<ul> <li>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</li> </ul>	<ul> <li>Shallow soil samples, orientation not applicable.</li> </ul>

Criteria	JORC Code explanation	Commentary
structure	<ul> <li>If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.</li> </ul>	
Sample security	<ul> <li>The measures taken to ensure sample security.</li> </ul>	<ul> <li>Sample security is not considered a significant risk given the location of the prospect.</li> <li>Nevertheless, the use of recognised transport providers and sample dispatch procedures directly from the field to the laboratory are considered sufficient to ensure appropriate sample security.</li> </ul>
Audits or reviews	<ul> <li>The results of any audits or reviews of sampling techniques and data.</li> </ul>	<ul> <li>For auger results no external audits or reviews have been conducted as these are not considered necessary for this style of work and industry-standard methods are employed.</li> <li>See below for results of geophysical surveys.</li> </ul>

# Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	Statement	Commentary
Mineral tenement and land tenure status	<ul> <li>Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.</li> <li>The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.</li> </ul>	<ul> <li>Data reported is from Exploration Licence E69/3052 which was granted on 27/07/2012 and is due to expire on 26/07/2017. The tenement is held 100% by Sheffield Resources Ltd.</li> <li>There are no known or experienced impediments to obtaining a licence to operate in the area.</li> <li>Sheffield has been operating successfully in the region for more than 2 years.</li> </ul>
Exploration done by other parties	<ul> <li>Acknowledgment and appraisal of exploration by other parties.</li> </ul>	<ul> <li>The Red Bull Project area was explored by Gold Partners between 1995 and 1999. An aeromagnetic interpretation was completed showing the extent of magnetic units followed up by 3,943m of air core drilling exploring for base metal mineralisation potential.</li> </ul>
Geology	<ul> <li>Deposit type, geological setting and style of mineralisation.</li> </ul>	<ul> <li>Sheffield is exploring primarily for magmatic-hosted Ni-Cu sulphide. Details are included in the body of the announcement.</li> <li>Auger soil samples are taken primarily from recently deposited sediment. Their chemical composition may be influenced by factors not related to bedrock mineralisation such as soil thickness, soil characteristics, depth of transported cover, sedimentary processes etc.</li> <li>The results are an initial geochemical evaluation.</li> </ul>
Drill hole Information	<ul> <li>A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:         <ul> <li>easting and northing of the</li> </ul> </li> </ul>	<ul> <li>A statistical summary of the assay results is included as Appendix 1.</li> <li>Individual sample locations included as Appendix 2.</li> </ul>

Criteria	Statement	Commentary
	<ul> <li>drill hole collar <ul> <li>elevation or RL (Reduced</li> <li>Level – elevation above sea</li> <li>level in metres) of the drill</li> <li>hole collar <ul> <li>dip and azimuth of the hole</li> <li>down hole length and</li> <li>interception depth</li> <li>hole length.</li> </ul> </li> <li>If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.</li> </ul></li></ul>	
Data aggregation methods	<ul> <li>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.</li> <li>Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.</li> <li>The assumptions used for any reporting of metal equivalent values should be clearly stated.</li> </ul>	<ul> <li>Contours of Ni shown in Figure 2 have been chosen to highlight those results the Company considers to form coherent, statistically anomalous regions.</li> </ul>
Relationship between mineralisation widths and intercept lengths	<ul> <li>These relationships are particularly important in the reporting of Exploration Results.</li> <li>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</li> <li>If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').</li> </ul>	• Not applicable
Diagrams	<ul> <li>Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.</li> </ul>	<ul> <li>Included in the body of announcement.</li> </ul>
Balanced reporting	<ul> <li>Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.</li> </ul>	<ul> <li>All new exploration results relating to the announcement are reported.</li> <li>In the case of previously-announced results, the initial announcement is referenced.</li> <li>Terms like "best", "strongest" or "significant" are used to highlight those results considered most important in the context of the announcement.</li> <li>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,</li> </ul>

Criteria	Statement	Commontany
Other substantive	<ul> <li>Other exploration data, if meaningful and material, should be reported including</li> </ul>	Commentary outlook, target sizes and mineralised material estimates. They include statements preceded by words such as "anticipated", "expected", "target", "scheduled", "intends", "potential", "prospective" and similar expressions. • The announcement contains results of ground geophysical surveys as follows:
exploration data	(but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.	Fixed Loop TEM (FLTEM) • Transmitter: Outer Rim HP • Current: 120A • Receiver: SMARTem24 • Base Frequency: 0.5Hz • Sensor: LANDTEM HT SQUID B-field • Components Bz, Bx, By Moving Loop TEM (MLTEM) • Transmitter: Outer Rim HP • Current: 80-100A • Receiver: SMARTem24 • Base Frequency: 1Hz • Sensor: Fluxgate B-field • Components: Bz, Bx, By Location of Data points • Handheld GPS used for receiver / transmitter locations, coordinates GDA94/MGA Zone 51 Data spacing and distribution • Line Spacing: 150-250m • Transmitter Loop Sizes: 200x200m (MLTEM),
		<ul> <li>600x600m (FLTEM)</li> <li>Audits and reviews</li> <li>All geophysical data collected was reviewed by an independent consultant.</li> <li>Several sources of conductors in the bedrock are possible, including but not limited to: concentrations of massive sulphide, graphite, conductive clays, saline groundwater etc.</li> <li>A model of a conductive source is made from a combination of measured data and assumptions made according to industry best practice. The resultant model should therefore be considered a "best estimate" of the conductive source, and not a definitive characterisation.</li> </ul>
Further work	<ul> <li>The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).</li> <li>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</li> </ul>	Included in the body of announcement.