ASX and Media Release

16 December 2013

THUNDERBIRD HIGH GRADE MINERALISATION EXTENDS BEYOND DEFINED RESOURCE

KEY POINTS

- **Thick, high grade results from step-out drilling, e.g. 28m @ 13.4% HM & 26m @ 12.5% HM**
- **Mineralisation extends well beyond December 2012 resource envelope**
- **All results now received from 2013 drilling campaign at Thunderbird**
- **Resource estimation has commenced - resource update due Q1 2014**

Mineral sands explorer Sheffield Resources ("Sheffield") (ASX:SFX) today announced further high grade drill results from its world class Thunderbird heavy mineral sand (HMS) deposit near Derby in the Canning Basin region of Western Australia.

The final batch of assay results from the 2013 aircore drilling programme returned thick, very high grade intervals, continuing the pattern set by earlier results. The results relate to 84 infill, step-out, and exploration drill holes (Figures 1-5). Results from step-out drilling include:

- **58.5m @ 9.17% HM** from 37.5m (THAC436), including **28m @ 13.4% HM** from 42.5m
- **51.5m @ 8.05% HM** from 32.5m (THAC411), including **26m @ 12.5% HM** from 41.5m
- **46m @ 6.95% HM** from 21.5m (THAC409), including **16.5m @ 13.2% HM** from 38m
- **50m @ 8.22% HM** from 63m (THAC502), including **33m @ 10.6% HM** from 75m

(>2% HM cut-off, including >7.5% HM cut-off, refer to Table 1 for full details).

The step-out drill holes demonstrate the continuity of thick, high grade mineralisation well beyond the December 2012 resource envelope as shown in Figure 1 below (and Figures 2-4). These results will be incorporated in the next resource update due in Q1 2014.

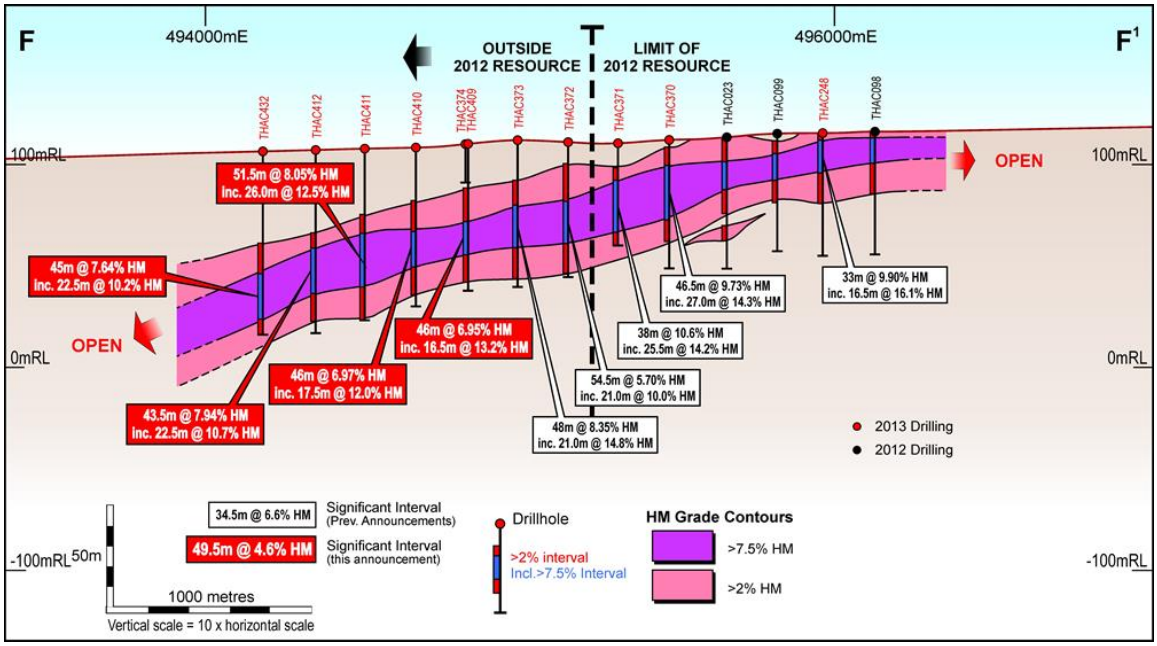

Figure 1: Section F-F', looking northwest. Note extension of mineralisation outside the 2012 resource.

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Results from infill drilling include:

- **40m @ 9.17% HM** from 35m (THAC405), including **23.5m @ 13.0% HM** from 36.5m
- **44m @ 7.98% HM** from 29.5m (THAC417), including **27.5m @ 10.6% HM** from 31m
- **58m @ 6.81% HM** from 32m (THAC408), including **18m @ 13.3% HM** from 48m

(>2% HM cut-off, including >7.5% HM cut-off, refer to Table 1 for full details).

Managing Director, Bruce McQuitty said the results confirmed the large scale, high grade and strong continuity of the Thunderbird deposit.

"Thunderbird is one of the largest and highest grade mineral sands deposits to be discovered in the last decade and these latest results extend the mineralisation well beyond the current resource envelope."

"Significantly, the recently identified thick, high grade zone remains open to the north and south."

"We look forward to incorporating this additional mineralisation into the Thunderbird resource update due in Q1 2014."

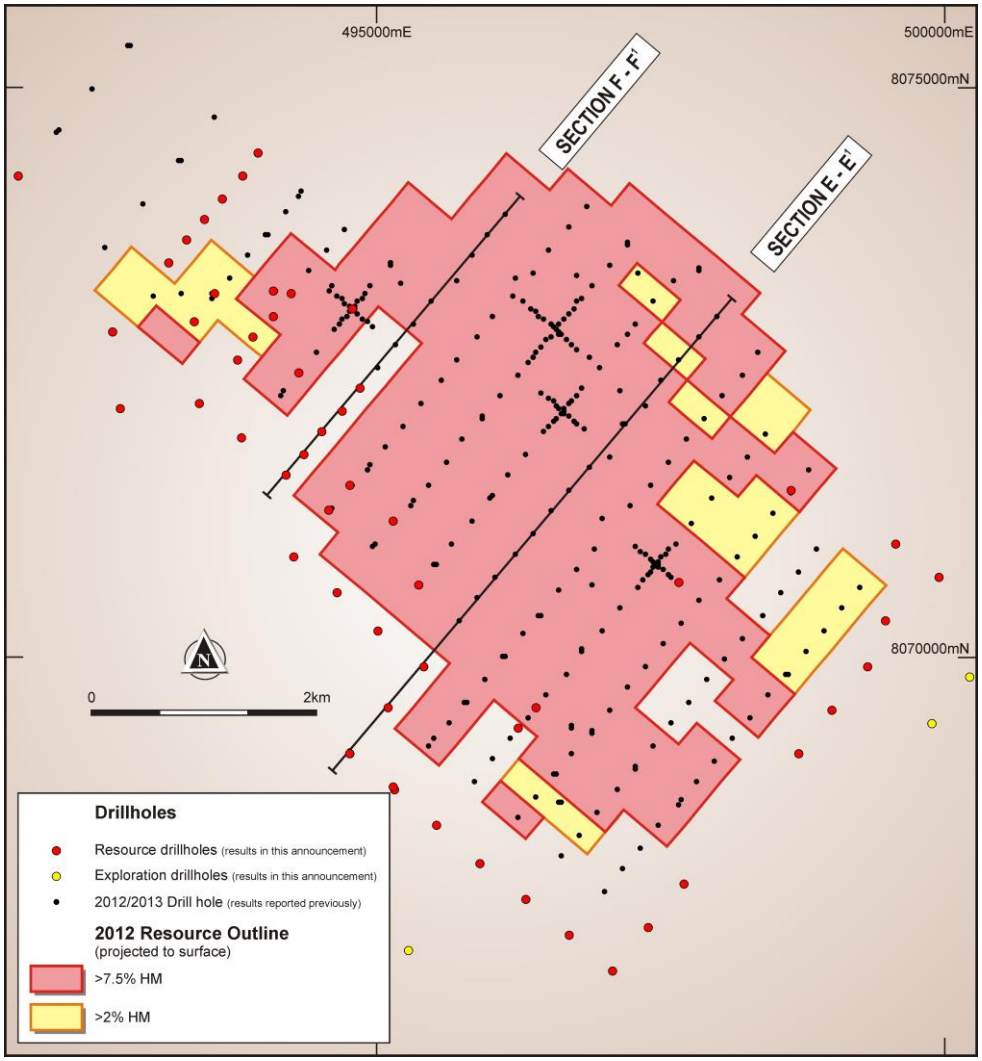

Figure 2: Thunderbird collar plan with outlines of the 2012 resource projected to surface

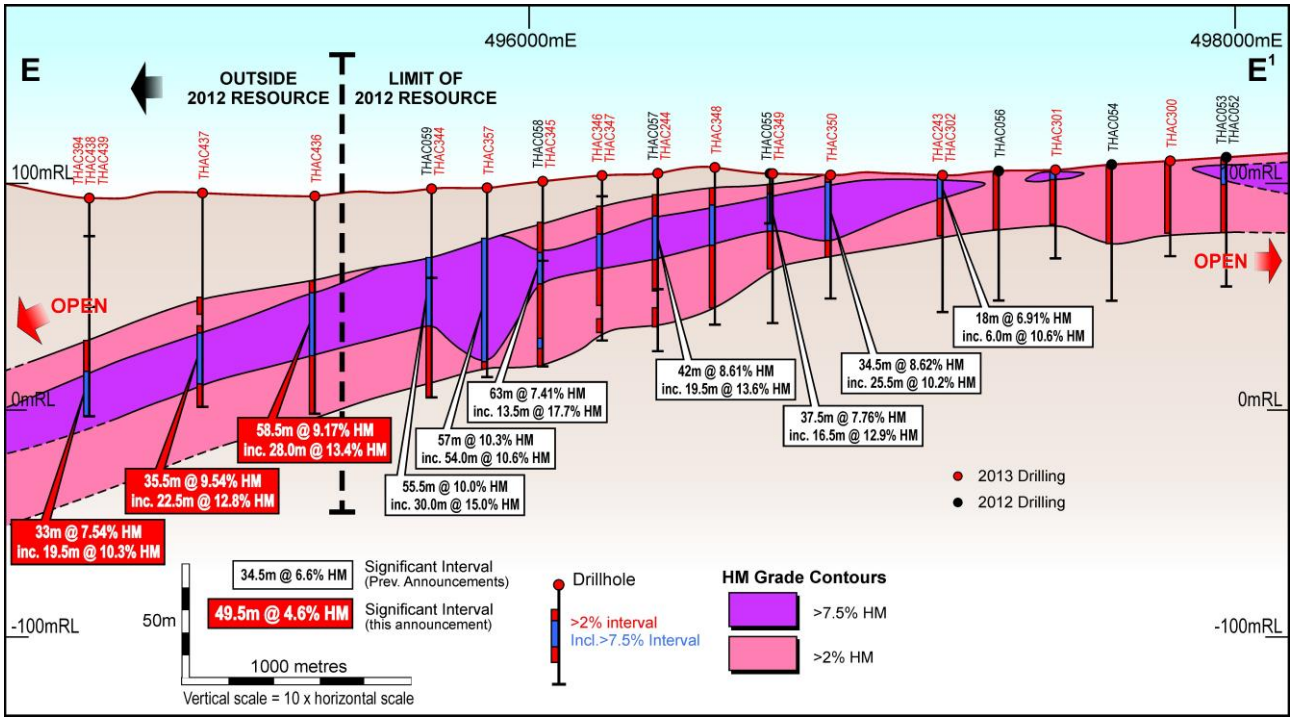

Figure 3: Section E-E', looking northwest

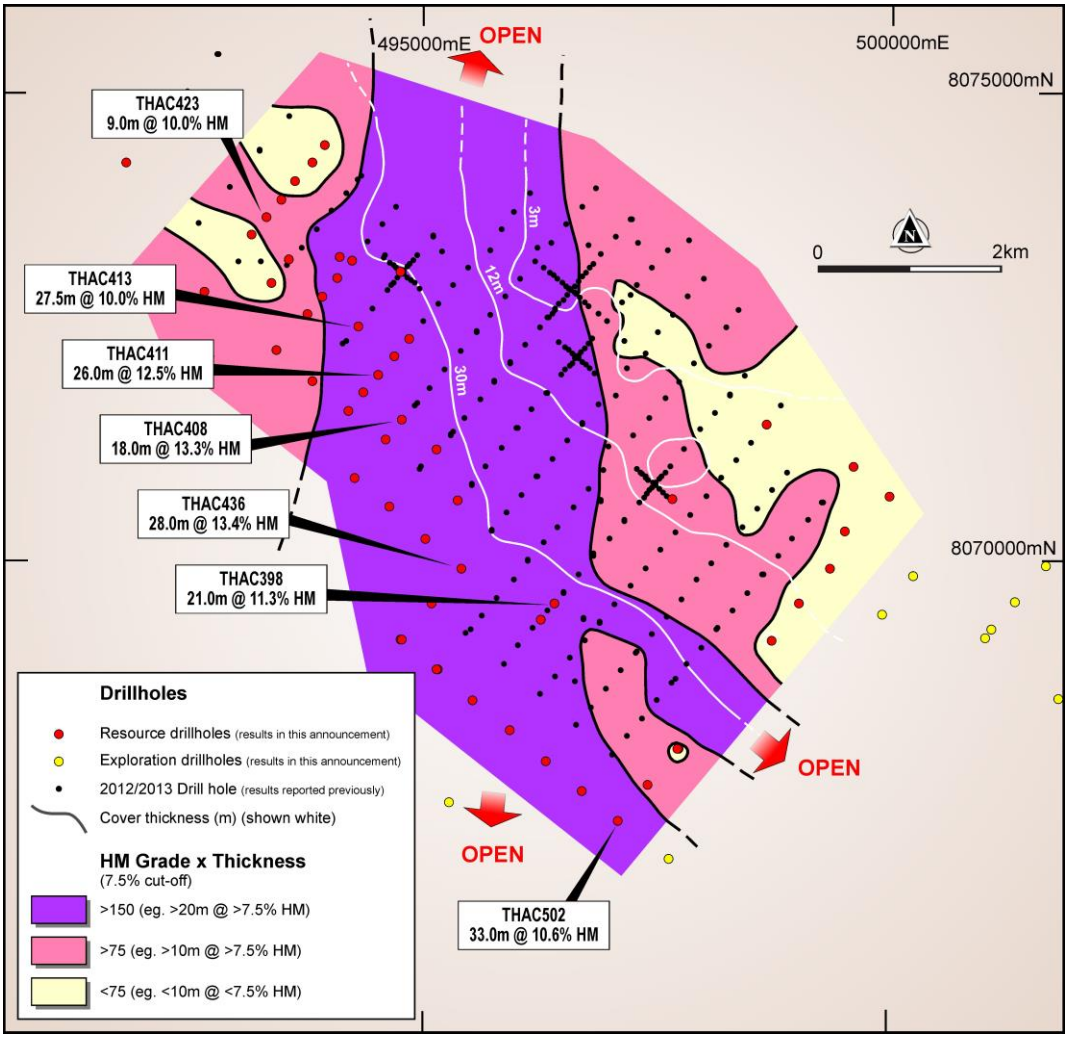

Figure 4: Thunderbird collar plan with HM grade x thickness contours, using a 7.5% HM cut off

2013 drilling programme

These results are the final batch of assays to be reported from the 2013 aircore drilling programme at Thunderbird which comprised 281 holes for 18,841m. Sheffield's ASX releases of 21 October 2013, 11 November 2013 and 25 November 2013 describe the earlier results.

Sheffield has commenced mineral assemblage determination work and interpretation of the combined data from the 2012 and 2013 drilling programmes in preparation for the updated resource estimate, scheduled for completion during Q1 2014.

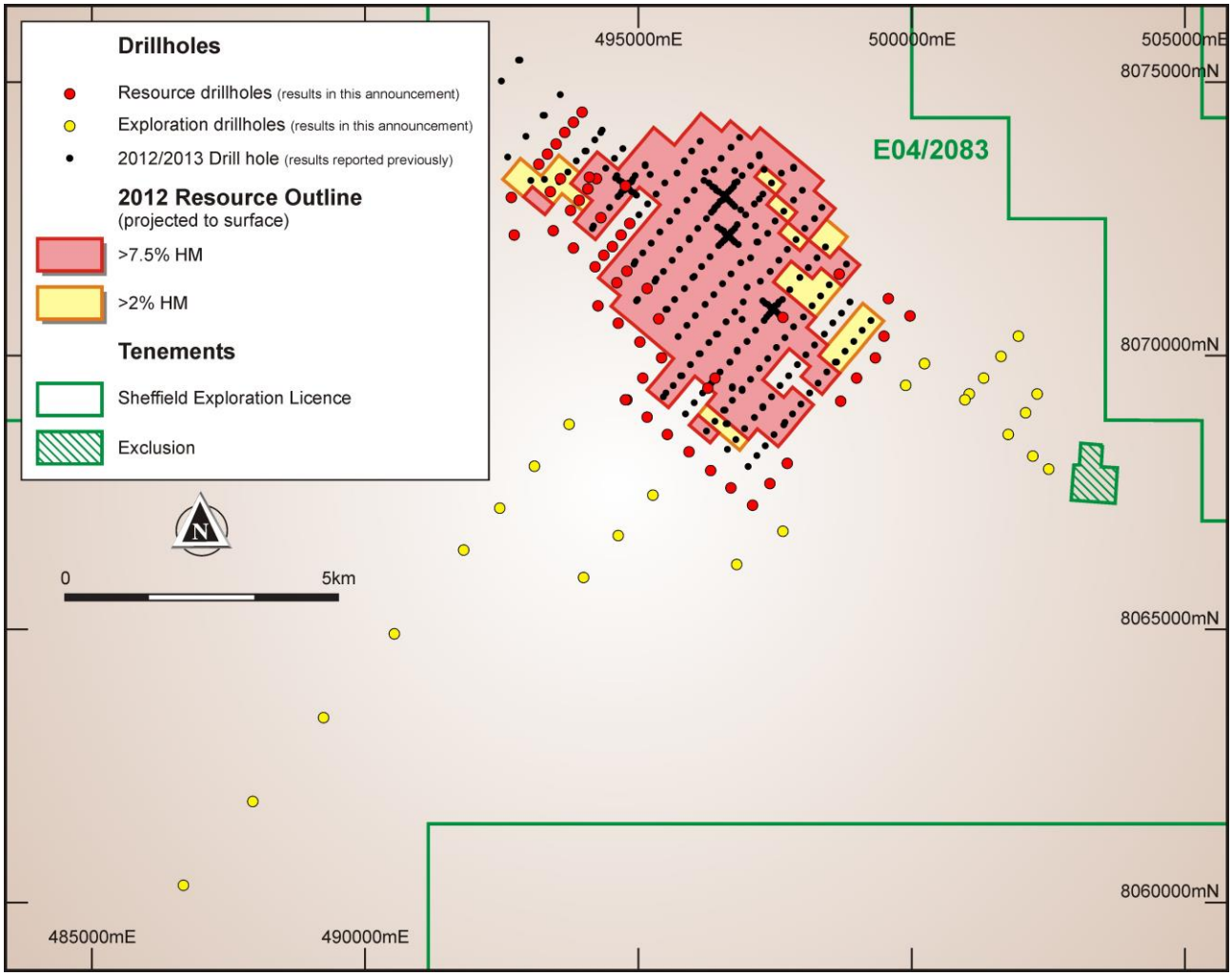

Figure 5: Thunderbird collar plan showing relative location of drill holes

About the Thunderbird Deposit

The Thunderbird deposit is located on crown land in the central part of the Dampier Peninsula, close to existing ports and sealed highways (Figure 6).

Thunderbird has Indicated and Inferred mineral resources totalling **1.37Bt @ 6.1% HM** for 83Mt of contained HM (at 2% HM cut-off), including 5.7Mt of zircon, 1.3Mt of rutile, 3.6Mt of leucoxene and 24Mt of ilmenite (Appendix 1).

The resource includes 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 is the focus of the current scoping study.

The deposit has favourable geometry, occurring as a thick, shallowly-dipping sheet 7km x 4km in area, extending from surface and open in most directions.

Metallurgical testwork confirms Thunderbird will generate high quality marketable products using conventional processing technology (see ASX release of 25 March 2013). Product assessment by TZ Minerals International (TZMI) confirms Thunderbird zircon as premium grade and suitable for the ceramic sector; while the primary ilmenite is suitable for sulphate TiO_2 pigment manufacture and sulphate or chloride slag. The secondary ilmenite, rutile and high TiO_2 leucoxene are suitable for the welding electrode sector (see ASX release of 1 August 2013).

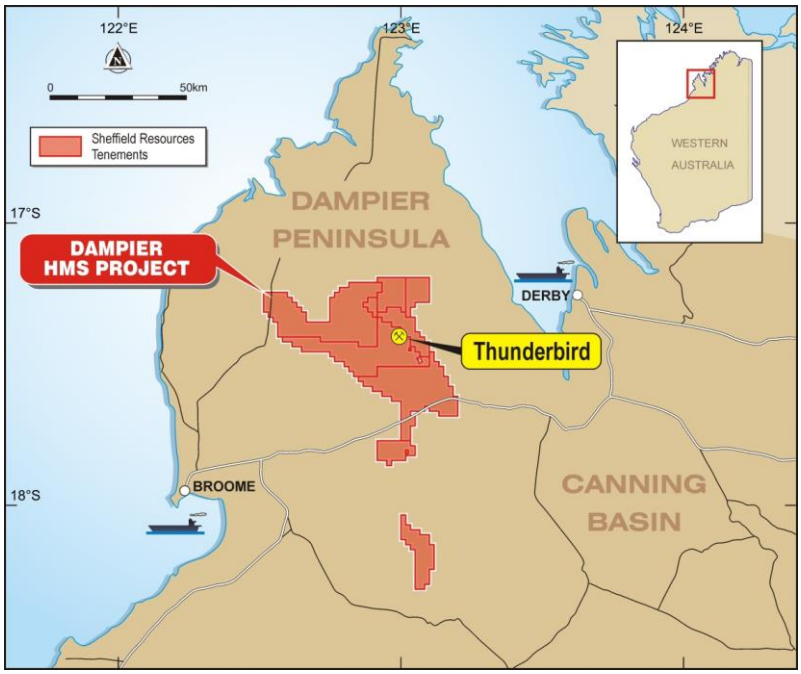

Figure 6: Location of Sheffield's Dampier HMS Project and the Thunderbird deposit

Thunderbird Scoping Study

Work continues on the Thunderbird Scoping Study which is scheduled for completion in Q1 2014, incorporating results from an updated mineral resource due in the same quarter.

ENDS

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COMPETENT PERSONS' STATEMENTS

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 style of mineralisation and type 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.

MINERAL RESOURCES

The information in this announcement relating to Mineral Resources for Thunderbird is extracted from the report entitled 'Large High Grade Maiden Resource for Thunderbird HMS Deposit' created on 18/12/2012 and is available to view on the Company's website: www.sheffieldresources.com.au. The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and 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 STATEMENTS

Some statements in this announcement 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 "expected", "planned", "target", "scheduled", "intends", "potential", "prospective" and similar expressions.

Results Tabulation - Thunderbird

Table 1: Thunderbird aircore drill results (16 December, 2013)

Step-out Drill Holes

Hole ID	Depth From (m)	Depth To (m)	Interval Width (m)*	HM wt%	Slimes wt%	Osize wt%	Drill Hole Collar Information				
							Easting	Northing	RL	Depth (m)	Comment
THAC270	8.0	34.5	26.5	5.75	19.4	10.5	498989.0	8069565.0	104.0	60.0	
THAC270	11.0	17.0	6.0	10.7	20.2	15.1					
THAC270	40.5	54.0	13.5	2.33	21.0	1.6					
THAC271	1.5	37.5	36.0	4.34	19.3	13.5	499313.3	8069944.8	108.7	60.0	
THAC272	12.0	45.0	33.0	5.90	20.3	12.1	498703.0	8069172.0	98.3	60.0	
including	*31.5*	*39.0*	*7.5*	*8.04*	*20.6*	*3.3*					
THAC273	0.0	33.0	33.0	5.45	20.3	15.2	499475.3	8070333.8	113.7	54.0	
including	*8.0*	*14.0*	*6.0*	*10.7*	*18.9*	*7.8*					
THAC274	8.0	33.5	25.5	2.70	25.9	10.5	499570.3	8071022.2	121.3	35.0	Hole abandoned, drill bit lost down-hole
THAC275	7.5	31.5	24.0	2.94	22.6	8.3	499950.1	8070715.1	122.5	48.0	
THAC388	63.0	67.5	4.5	3.46	6.1	0.6	496296.4	8067898.0	93.5	83.0	Hole ended above mineralisation, hard rock layer at 83m
and	76.5	83.0	6.5	6.98	3.6	16.2					
THAC389	63.0	82.0	19.0	6.61	4.1	26.8	495903.3	8068220.8	95.4	82.0	Hole abandoned, hard rock layer at 82m
including	*73.5*	*81.0*	*7.5*	*8.06*	*4.1*	*19.8*					
THAC392	67.5	81.0	13.5	4.85	6.4	13.4	495517.4	8068543.6	96.0	81.0	Hole ended above projected position of high-grade mineralisation
THAC393	64.5	81.0	16.5	4.79	7.5	20.6	495133.5	8068872.9	94.7	81.0	Re-drill of THAC440
including	*73.5*	*81.0*	*7.5*	*7.76*	*6.1*	*18.2*					
THAC394	No significant interval						494753.7	8069188.6	93.8	16.5	Hole abandoned
THAC399	No significant interval						496244.7	8069393.4	90.5	13.0	Hole abandoned, hard rock layer at 13m
THAC409	21.5	67.5	46.0	6.95	19.9	2.6	494834.5	8072391.4	109.9	72.0	Re-drill of THAC374
including	*38.0*	*54.5*	*16.5*	*13.2*	*21.1*	*4.4*					
THAC410	26.0	72.0	46.0	6.97	19.3	6.8	494673.0	8072197.7	108.2	78.0	
including	*41.0*	*58.5*	*17.5*	*12.0*	*20.4*	*9.7*					

Hole ID	Depth From (m)	Depth To (m)	Interval Width (m)*	HM wt%	Slimes wt%	Osize wt%	Drill Hole Collar Information				
							Easting	Northing	RL	Depth (m)	Comment
THAC411	32.5	84.0	51.5	8.05	17.8	10.4	494509.1	8071999.7	107.6	84.0	
including	*41.5*	*67.5*	*26.0*	*12.5*	*18.7*	*12.0*					
THAC412	40.5	84.0	43.5	7.94	18.6	9.8	494352.1	8071816.0	107.1	90.0	
including	*48.0*	*70.5*	*22.5*	*10.7*	*18.0*	*6.0*					
THAC420	49.5	94.5	45.0	5.58	19.1	6.7	493749.2	8072650.0	114.7	96.0	
including	*61.5*	*79.5*	*18.0*	*8.37*	*19.3*	*7.2*					
THAC421	52.5	96.0	43.5	5.16	18.6	8.1	491830.7	8074254.2	125.0	96.0	
including	*61.5*	*67.5*	*6.0*	*9.52*	*12.0*	*4.8*					
THAC422	42.5	47.0	4.5	4.65	15.5	2.7	493156.0	8073488.5	122.7	96.0	
and	55.5	93.0	37.5	5.26	21.5	9.2					
including	*76.5*	*84.0*	*7.5*	*8.81*	*17.3*	*4.6*					
THAC423	51.0	94.5	43.5	5.89	20.0	9.8	493312.8	8073683.4	123.4	96.0	
including	*72.0*	*81.0*	*9.0*	*9.99*	*18.3*	*8.9*					
THAC424	43.5	90.0	46.5	4.70	18.8	8.4	493475.6	8073870.4	123.9	96.0	
THAC425	42.0	82.5	40.5	5.56	20.5	6.5	493624.7	8074060.1	123.6	96.0	
including	*64.5*	*69.0*	*4.5*	*10.2*	*17.0*	*11.6*					
and	88.5	93.0	4.5	2.57	23.0	4.2					
THAC426	36.0	76.5	40.5	6.35	20.4	6.1	493800.2	8074258.8	123.3	90.0	
including	*48.0*	*52.5*	*4.5*	*10.1*	*22.2*	*18.9*					
including	*58.5*	*67.5*	*9.0*	*9.97*	*18.4*	*4.9*					
THAC427	31.5	67.5	36.0	5.07	21.5	8.0	493947.2	8074445.9	123.8	90.0	
including	*45.0*	*49.5*	*4.5*	*11.4*	*16.0*	*12.6*					
THAC428	54.0	96.0	42.0	4.31	19.2	4.0	492659.0	8072893.3	118.4	96.0	
THAC429	57.0	96.0	39.0	4.18	16.2	2.9	492714.4	8072202.4	113.3	96.0	
THAC430	57.0	96.0	39.0	5.89	19.9	6.7	493421.0	8072267.5	112.7	96.0	
including	*79.5*	*87.0*	*7.5*	*9.07*	*17.9*	*5.1*					
THAC431	37.5	42.0	4.5	5.96	12.7	3.2	493804.1	8071942.5	109.6	96.0	
THAC431	52.5	94.5	42.0	6.67	19.3	4.8					

Hole ID	Depth From (m)	Depth To (m)	Interval Width (m)*	HM wt%	Slimes wt%	Osize wt%	Drill Hole Collar Information				
							Easting	Northing	RL	Depth (m)	Comment
including	*66.0*	*84.0*	*18.0*	*9.14*	*18.5*	*5.8*					
THAC432	45.0	90.0	45.0	7.64	18.2	8.1	494184.6	8071618.4	106.4	90.0	Hole abandoned, boggy ground
including	*60.0*	*82.5*	*22.5*	*10.2*	*17.9*	*5.8*					
THAC433	46.5	84.0	37.5	6.68	15.7	8.8	494251.3	8070909.2	103.1	84.0	
including	*61.5*	*84.0*	*22.5*	*8.63*	*18.3*	*6.0*					
THAC434	47.0	96.0	49.0	6.51	15.9	5.2	494630.4	8070594.5	100.6	96.0	
including	*61.5*	*85.5*	*24.0*	*8.97*	*14.7*	*6.2*					
THAC435	36.5	44.0	7.5	3.40	15.8	27.9	495006.1	8070256.6	98.1	96.0	
and	51.0	96.0	45.0	8.45	17.5	3.2					
including	*54.0*	*79.5*	*25.5*	*11.9*	*14.7*	*5.3*					
THAC436	37.5	96.0	58.5	9.17	17.1	5.8	495396.9	8069947.7	94.7	96.0	
including	*42.5*	*70.5*	*28.0*	*13.4*	*15.1*	*7.1*					
THAC437	46.0	53.5	7.5	3.22	18.0	6.8	495079.1	8069571.0	95.9	94.0	
and	58.5	94.0	35.5	9.54	16.3	8.0					
including	*61.5*	*84.0*	*22.5*	*12.8*	*13.4*	*10.0*					
THAC438	No significant interval						494751.1	8069194.2	93.8	48.0	Hole abandoned
THAC439	63.0	96.0	33.0	7.54	11.9	8.5	494760.3	8069188.3	93.8	96.0	Re-drill of THAC438 and THAC394
including	*76.5*	*96.0*	*19.5*	*10.3*	*14.3*	*4.9*					
THAC440	No significant interval						495140.2	8068875.1	94.7	46.5	Re-drill of THAC393, hole abandoned
THAC441	34.0	75.0	41.0	4.92	17.2	3.6	497705.9	8068025.8	87.1	75.0	Re-drill of THAC500
including	*51.0*	*57.0*	*6.0*	*12.0*	*16.4*	*5.5*					
THAC500	nsi						497700.5	8068027.2	87.0	9.2	Hole abandoned, hard rock layer at 9.2m
THAC501	No significant interval						497382.1	8067641.6	84.7	21.3	Hole abandoned, hard rock layer at 21.3m
THAC502	49.5	54.0	4.5	5.28	5.8	5.6	497062.8	8067262.0	85.2	113.0	Hole abandoned, boggy ground
and	63.0	113.0	50.0	8.22	6.8	5.8					
including	*75.0*	*108.0*	*33.0*	*10.6*	*7.6*	*4.4*					
THAC503	No significant interval						496677.7	8067572.9	88.3	38.0	Hole abandoned, hard rock layer at 38m

Infill Drill Holes

Hole ID	Depth From (m)	Depth To (m)	Interval Width (m)*	HM wt%	Slimes wt%	Osize wt%	Drill Hole Collar Information				
							Easting	Northing	RL	Depth (m)	Comment
THAC252	40.5	45.0	4.5	4.23	13.0	11.8	493371.2	8072974.8	118.0	96.0	
and	54.0	93.0	39.0	6.05	21.1	11.5					
including	*75.0*	*82.5*	*7.5*	*8.88*	*18.8*	*6.8*					
THAC390	9.0	46.5	37.5	5.20	14.8	9.9	497642.8	8070678.5	100.8	54.0	Re-drill of THAC218
Including	*10.5*	*16.5*	*6.0*	*14.4*	*13.4*	*7.4*					
THAC391	7.5	28.5	21.0	3.59	18.8	12.3	498647.6	8071477.8	110.3	48.0	Re-drill of THAC239
THAC398	22.5	84.0	61.5	6.20	11.5	11.7	496387.7	8069572.2	94.6	84.0	
Including	*36.0*	*57.0*	*21.0*	*11.3*	*8.3*	*18.3*					
THAC405	35.0	75.0	40.0	9.17	17.8	8.6	495349.9	8070663.2	97.7	84.0	Re-drill of THAC356
Including	*36.5*	*60.0*	*23.5*	*13.0*	*15.4*	*13.8*					
THAC406	30.5	81.0	50.5	6.65	17.7	9.4	495132.8	8071213.0	101.6	84.0	Re-drill of THAC364
Including	*39.5*	*60.0*	*20.5*	*12.7*	*16.1*	*8.9*					
THAC407	38.0	94.5	56.5	6.82	18.6	6.3	494582.8	8071315.2	103.1	96.0	
Including	*44.0*	*70.5*	*26.5*	*10.5*	*18.4*	*11.9*					
THAC408	32.0	90.0	58.0	6.81	18.6	5.4	494759.0	8071525.1	104.0	90.0	
Including	*48.0*	*66.0*	*18.0*	*13.3*	*18.1*	*9.3*					
THAC413	19.0	25.0	6.0	2.49	9.8	1.6	494292.4	8072522.2	111.6	90.0	
THAC413	34.0	76.5	42.5	8.14	19.4	7.9					
Including	*35.5*	*63.0*	*27.5*	*10.0*	*19.6*	*10.3*					
THAC414	16.5	61.5	45.0	7.26	19.9	9.0	494748.8	8073105.6	113.1	72.0	
Including	*31.5*	*54.0*	*22.5*	*11.6*	*18.6*	*10.6*					
THAC415	49.5	87.0	37.5	5.91	21.1	7.8	493558.3	8073230.6	119.5	96.0	
Including	*70.5*	*79.5*	*9.0*	*8.32*	*19.8*	*4.1*					
THAC416	19.0	25.0	6.0	2.92	11.7	0.9	494092.2	8073255.6	117.0	90.0	
and	34.0	90.0	56.0	6.37	20.8	5.7					
Including	*35.5*	*40.0*	*4.5*	*11.5*	*18.9*	*4.6*					
Including	*48.0*	*73.5*	*25.5*	*8.96*	*21.5*	*7.6*					

Hole ID	Depth From (m)	Depth To (m)	Interval Width (m)*	HM wt%	Slimes wt%	Osize wt%	Drill Hole Collar Information				
							Easting	Northing	RL	Depth (m)	Comment
THAC417	29.5	73.5	44.0	7.98	19.8	6.1	494225.1	8073220.8	115.7	84.0	
Including	*31.0*	*58.5*	*27.5*	*10.6*	*20.2*	*6.3*					
THAC418	36.0	82.5	46.5	7.63	19.3	10.4	494071.4	8073030.6	115.6	84.0	
Including	*36.0*	*69.0*	*33.0*	*9.42*	*19.9*	*9.3*					
THAC419	41.0	84.0	43.0	6.70	19.9	14.3	493905.7	8072837.7	115.4	96.0	
Including	*41.0*	*48.5*	*7.5*	*10.3*	*20.0*	*17.7*					
Including	*64.5*	*69.0*	*4.5*	*11.9*	*16.5*	*22.1*					

Exploration Drill Holes

Hole ID	Depth From (m)	Depth To (m)	Interval Width (m)*	HM wt%	Slimes wt%	Osize wt%	Drill Hole Collar Information				
							Easting	Northing	RL	Depth (m)	Comment
THAC276	4.5	39.0	34.5	3.10	16.7	7.6	499879.2	8069453.2	107.4	54.0	
THAC277	4.5	34.5	30.0	2.54	20.2	7.5	500207.6	8069857.4	116.8	54.0	
THAC278	4.5	18.0	13.5	3.05	21.4	4.9	500967.2	8069196.0	104.0	60.0	
THAC279	No significant interval						501288.1	8069577.2	109.2	60.0	
THAC280	No significant interval						501617.1	8069962.5	111.1	60.0	
THAC281	No significant interval						501936.1	8070345.3	110.3	54.0	
THAC282	No significant interval						501744.6	8068556.7	105.7	54.0	
THAC283	No significant interval						502500.9	8067916.2	99.6	54.0	
THAC284	No significant interval						502070.4	8068940.3	111.0	54.0	
THAC285	No significant interval						502291.1	8069275.8	112.4	54.0	
THAC286	No significant interval						501288.7	8069582.5	109.2	60.0	Re-drill of THAC279
THAC375	No significant interval						493720.5	8068744.3	101.2	96.0	
THAC376	No significant interval						493082.1	8067978.0	107.2	87.0	
THAC377	No significant interval						492453.0	8067215.6	113.3	96.0	
THAC378	No significant interval						491800.1	8066438.7	117.1	48.0	Hole abandoned, hard rock layer at 48m
THAC379	103.5	108.0	4.5	3.95	12.6	0.2	490516.5	8064909.3	119.6	123.0	Hole ended, out of rods

Hole ID	Depth From (m)	Depth To (m)	Interval Width (m)*	HM wt%	Slimes wt%	Osize wt%	Drill Hole Collar Information				
							Easting	Northing	RL	Depth (m)	Comment
THAC380	No significant interval						489226.7	8063383.2	116.2	96.0	
THAC381	No significant interval						487942.9	8061846.7	122.8	96.0	
THAC382	No significant interval						486656.9	8060316.3	135.0	90.0	
THAC383	No significant interval						495261.3	8067453.6	98.1	95.0	
THAC384	No significant interval						494619.8	8066690.6	101.4	96.0	
THAC385	No significant interval						493976.7	8065923.8	103.1	93.0	
THAC386*	91.5	96.0	4.5	2.27	3.7	7.9	496791.2	8066177.1	94.6	96.0	Hole ended above projected position of mineralisation
THAC387	No significant interval						497627.1	8066787.1	83.4	42.5	Hole abandoned above mineralisation, hard rock layer at 42.5m
THAC395	No significant interval						492449.0	8067212.8	113.4	69.0	
THAC396	0.0	9.0	9.0	2.33	14.7	40.5	501040.9	8069289.2	105.6	69.0	
THAC397	0.0	15.0	15.0	2.01	18.8	10.7	502206.7	8068157.5	100.4	39.0	

*All intervals calculated using 2% HM lower cut, 4.5m minimum width, maximum 4.5m internal waste; "*including*" intervals >7.5% HM, 4.5m minimum width, maximum 4.5m internal waste. HM, Slimes and Oversize ("Osize") determined by Heavy Liquid Separation (HLS) using TBE (sg. 2.96g/cc); screen sizes: slimes 38µm and oversize ("Osize") +1mm. RTKGPS surveyed hole coordinates (+/- 0.02m X and Y accuracy), RL determined by projection to a DTM model created from regional (Landgate) spot heights. Easting and Northing coordinate system is MGA Zone 51 (GDA94), RL is AHD. All holes were drilled vertically.

Appendix 1: Thunderbird Mineral Resource at 18 December, 2012.

The following information was prepared and first disclosed under the JORC Code 2004. It 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.

Table 1: Thunderbird Mineral Resource (at 2% and 7.5% HM cut-off)[1]

		Mineral Resources						Mineral Assemblage[2]			
Resource Category	**Cut off (HM%)**	Material (Mt)*	Bulk Density	HM %	Slimes %[3]	Osize %	**In-situ HM (Mt)***	Zircon %	Rutile %	Leuc. %	Ilmenite %
Indicated	**2.0**	299	2.1	7.2	19	14	**21.5**	6.9	1.6	4.3	29
Inferred	**2.0**	1,075	2.1	5.8	17	16	**61.9**	6.9	1.6	4.3	29
Total	**2.0**	**1,374**	**2.1**	**6.1**	**17**	**15**	**83.4**	**6.9**	**1.6**	**4.3**	**29**
Indicated	**7.5**	138	2.1	11.5	18	16	**15.8**	6.9	1.6	4.3	29
Inferred	**7.5**	379	2.1	9.6	16	19	**36.5**	6.9	1.6	4.3	29
Total	**7.5**	**517**	**2.1**	**10.1**	**16**	**18**	**52.3**	**6.9**	**1.6**	**4.3**	**29**

Table 2: Thunderbird prospect contained Valuable HM (VHM) Resource Inventory (at 2% and 7.5% HM cut-off)

Resource Category	**Cut off (HM%)**	Zircon (kt)*	Rutile (kt)*	Leuc. (kt)*	Ilmenite (kt)*	**Total VHM (kt)***
Indicated	**2.0**	1,483	344	924	6,256	**9,007**
Inferred	**2.0**	4,270	990	2,661	18,007	**25,927**
Total	**2.0**	**5,753**	**1,334**	**3,585**	**24,262**	**34,934**
Indicated	**7.5**	1,089	252	678	4,592	6,611
Inferred	**7.5**	2,521	585	1,571	10,631	15,307
Total	**7.5**	**3,609**	**837**	**2,249**	**15,223**	**21,918**

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

[1] This estimate is classified and reported in a manner compliant with the JORC code and guidelines (JORC, 2004). [2] The Mineral Assemblage is represented as the percentage of the Heavy Mineral (HM) component of the deposit, as determined by QEMSCAN. TiO_2 minerals defined according to the following ranges: Rutile >95% TiO_2; Leucoxene 70-95% TiO_2; Ilmenite 40-70% TiO_2.

Appendix 2: JORC (2012) Table 1 Report

Section 1 Sampling Techniques and Data

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

Criteria	JORC Code explanation	Commentary
Sampling techniques	• *Nature and quality of sampling (eg 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.* • *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* • *Aspects of the determination of mineralisation that are Material to the Public Report.* • *In cases where 'industry standard' work has been done this would be relatively simple (eg '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 (eg submarine nodules) may warrant disclosure of detailed information.*	• NQ and HQ diameter aircore drilling used to collect 2-3kg samples at 1.5m intervals down-hole. • Mineral Sands Industry-standard drilling technique.
Drilling techniques	• *Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg 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).*	• Wallis Drilling aircore system, NQ (hole ID's THAC300 - 399, THAC500 - 503) and HQ (THAC165-299, THAC400 - 441) diameter holes. • Blade drill bit used for majority of drilling, where hard rock layers intersected and unable to drill with blade bit, pencil (open-hole) or reverse circulation hammer used to penetrate layer, then return to blade. • Wallis aircore system used as an industry standard for HMS deposits.
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure representative nature of the samples.* • *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.*	• Sample quality (including wet vs. dry and qualitative recovery) is logged at the drill site. • Orientation process undertaken at the beginning of program to set up sampling system to collect 2-3kg sub-sample from 1.5m intervals. Remainder of sample (spoil) retained as 3m-composites for future analysis if required. • Sample weight recorded at laboratory • Drill system is optimised for HMS. • Duplicate samples are collected at the drill site (see below) to enable analysis of data precision
Logging	• *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support*	• Sand is washed and panned then geologically logged on-site in 1.5m intervals, recording primary, secondary

Criteria	JORC Code explanation	Commentary
	appropriate Mineral Resource estimation, mining studies and metallurgical studies. • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* • *The total length and percentage of the relevant intersections logged.*	and oversize lithology, qualitative hardness, grainsize, rounding, sorting, washability, with visual estimates of HM, slimes and oversize %, and depth to water table. • Entire length of drillhole is logged, minimum interval length is 1.5m. • Logging is suitable such that interpretations of grade and deposit geology can be used, for example, to establish context of exploration results and support Mineral Resource estimation.
Sub-sampling techniques and sample preparation	• *If core, whether cut or sawn and whether quarter, half or all core taken.* • *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* • *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* • *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.* • *Whether sample sizes are appropriate to the grain size of the material being sampled.*	Drill Site • 2-3kg sample collected at 1.5m intervals in numbered bags at the drill site via rotary splitter at cyclone discharge point. • Duplicate samples (field duplicates) collected at drill site 1 in every 40 samples. • Reference standard and blank material samples inserted 1 each in every 40 samples. • Sample submitted to external laboratory for heavy liquid separation (HLS) determination of weight per cent heavy mineral (HM), Slimes (SL) and Oversize (OS). Laboratory • 2-3kg drill sample sub-split via rotary splitter to approx. 200g for analysis. • HM, SL and OS calculated as percentage of total sample weight. • Laboratory repeats are conducted 1 in every 20 samples, and laboratory reference standard inserted 1 in every 40 samples. All • Spacing of duplicate, standard, blank and lab repeat samples are designed to identify sample misplacement or misallocation during sample collection and laboratory analysis. • Sample representivity and data precision has been determined as acceptable through analysis of results from field duplicate samples and laboratory repeats. • Visual estimates of HM, Slimes and OS logged at the drill site are compared against laboratory results to identify any major errors. • Analysis of duplicates show the data has acceptable precision, indicating sampling techniques are appropriate for the deposit style. • Techniques are considered appropriate for use in public reporting of exploration results and Mineral Resource estimation.

Criteria	JORC Code explanation	Commentary
Quality of assay data and laboratory tests	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* • *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.* • *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.*	• Assay and laboratory procedures are industry standard for HMS, although laboratories methods and heavy liquid composition vary slightly. TBE (2.96g/ml) is used for these results. • Method produces a total grade as weight per cent of the initial sample. • Method does not determine the relative amounts of valuable (saleable or marketable) and non-valuable heavy mineral species. Mineralogical determination studies are planned. • QAQC sample frequency is described above. The HM reference sample used is a field-homogenised bulk sample with expected values and ranges determined internally from assay results. Blank material used is commercially available builder's sand. • Reference standards and blanks are examined for performance over time and within laboratory batches. Batches or sub-batches are re-analysed if unacceptable QAQC data are returned. • Analysis of reference standards, blanks and laboratory repeats show the data to be of acceptable accuracy and precision for use in public reporting of exploration results and Mineral Resource estimation.
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *The use of twinned holes.* • *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* • *Discuss any adjustment to assay data.*	• Significant intervals are reviewed by senior Sheffield personnel prior to release. • Twinned holes have been qualitatively examined with no issues identified. • Data is logged electronically using "validation at point of entry" systems prior to storage in the Company's drillhole database, which is managed by Company personnel and an external consultancy. • Documentation related to data custody and validation are maintained on the Company's' server. • No assay data have been adjusted.
Location of data points	• *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.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	• Drill hole collar locations are surveyed by licenced surveyors using a RTK GPS system with expected accuracy of +/- 0.02m horizontal and +/- 0.03m vertical. • Coordinates are referenced to the Map Grid of Australia (MGA) zone 51 on the Geographic Datum of Australia (GDA94). • Vertical datum geoid model is AUSGEOID98 (Australia). • Reported RL determined by projection of surveyed hole collars to regional (Landgate) DTM model. Mineral Resource estimation will use this projected RL value, hence this value is reported with the exploration results. The average difference is ~0.6m which is considered negligible given the nature of mineralisation, and size of the Thunderbird

Criteria	JORC Code explanation	Commentary
		deposit.
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *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.* • *Whether sample compositing has been applied.*	• See figures in body of announcement for actual hole spacing. The nominal spacing of most drill holes is 500m x 500m and 250m x 500m. • Samples reported in the announcement have not been composited. Significant intervals are reported as indicated in the relevant table(s) in the body of the announcement. • Infill, extension and exploration holes are included in this announcement.
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* • *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.*	• Mineralisation is flat-lying to less than 4deg. dip, vertical drill holes therefore approximate true thickness. Note cross sections in the body of the announcement are displayed with vertical exaggeration.
Sample security	• *The measures taken to ensure sample security.*	• Sample security is not considered a significant risk given the location of the deposit and bulk-nature of mineralisation. • 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.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• No formal external audits or review of sample techniques or data have been conducted. • Audits are not considered necessary at this stage of the Project's development. Industry-standard methods are being employed.

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	• *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.* • *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.*	• Data reported is from Exploration Licence E04/2083 which was granted on 05/09/2011 and is due to expire on 04/09/2011. The tenement is held 100% by Sheffield Resources Ltd. • There are no known or experienced impediments to obtaining a licence to operate in the area. • Sheffield has been operating successfully in the region for 2 years to date.
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• The Dampier project area was explored by Rio Tinto ("Rio") between 2003 and 2009. Rio completed four broadly spaced aircore drill traverses, identifying heavy mineral concentrations at Thunderbird averaging 8.07% HM with 8.0% zircon. Rio surrendered the tenements following the

Criteria	Statement	Commentary
		2008 global financial crisis. • Further details are included in Sheffield's ASX release entitled 'New Licence Granted Over High Grade Zircon Project' dated 7 September, 2011 (available from the company's website: www.sheffieldresources.com.au).
Geology	• *Deposit type, geological setting and style of mineralisation.*	• The Dampier Project is within the Canning Basin in the Kimberley region of Western Australia. The Canning Basin is an intracratonic basin which contains Ordovician to Cretaceous deposits covered by Cenozoic sediments. • Thunderbird is a heavy mineral sand (HMS) deposit hosted by deeply weathered Cretaceous-aged sand formations. Valuable heavy minerals (VHM) contained within the deposit include ilmenite, zircon, leucoxene and rutile. The mineralisation is in a thick, broad anticlinal sheet-like body striking northwest. In the core of the anticline it is at surface, rolling at about 5deg. dip about the axis, extending under cover to the southwest. • The areal extent, width, grade, geological continuity and grainsize of the Thunderbird mineralisation are suggestive of a sub-wave base depositional environment.
Drill hole Information	• *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:* o *easting and northing of the drill hole collar* o *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* o *dip and azimuth of the hole* o *down hole length and interception depth* o *hole length.* • *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.*	• Included in the body of announcement. • Where drill holes have been unable to reach planned depths this has been indicated in the comments column of Table 1 in the body of announcement.
Data aggregation methods	• *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.* • *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.* • *The assumptions used for any reporting of*	• Criteria for calculating significant intervals are included at the end of in Table 1 in the body of the announcement. Minimum widths, maximum internal waste intervals and cut-off grades have been selected to most-appropriately represent the mineralised body, taking into account overall deposit grade and geological continuity. No "high" or "top-cuts" are applied. High-grade components of significant intervals are detailed in Table 1 preceded by the term "*including*".

Criteria	Statement	Commentary
	metal equivalent values should be clearly stated.	
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *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').*	• Mineralisation is flat-lying to less than 4deg. dip, vertical drill holes therefore approximate true thickness. • Refer to cross sections in the body of the announcement for visual representation of drillhole orientation vs. deposit orientation, note the vertical exaggeration used.
Diagrams	• *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.*	• See body of announcement for plan and cross section views and tabulation of results (Table 1).
Balanced reporting	• *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.*	• All drill hole results are reported in this announcement. Where results do not meet the criteria of significant interval these are reported in Table 1 as "no significant interval". • Plan and cross section diagrams refer to results from previous announcements; those results have been reported in full in previous announcements.
Other substantive exploration data	• *Other exploration data, if meaningful and material, should be reported including (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.*	• Sheffield has previously reported deposit information for Thunderbird including a Mineral Resource estimate (2012 Resource – Appendix 1), mineral assemblage data, heavy mineral product quality, product recoverability and product marketability. • Where relevant this information has been included in the body of this announcement.
Further work	• *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	• The extents of the Thunderbird mineralisation have not yet been defined. Future work may include drill testing of depth and strike extensions to the mineralisation. • Work related to any potential mining development of the Thunderbird deposit, apart from that already announced by the Company, is dependent on outcomes of scoping –level mining studies. This includes, but is not necessarily limited to the increased knowledge of environmental, geotechnical and hydrological aspects of the deposit. • Sheffield has commenced a Scoping Study for Thunderbird, which is scheduled for completion in Q1 2014. This will incorporate results from an updated mineral resource, including drilling results reported in this announcement, due in the same quarter.

ABOUT SHEFFIELD RESOURCES

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

ASX Code – SFX	Market Cap @ 50.5cps - $60.4m
Issued shares – 119.6m	Cash - $5.3m (at 30 September 2013)

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 Canning Basin region, contains the large, high grade zircon-rich Thunderbird HMS deposit.

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 discovery.

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.