ASX and Media Release

3 September 2012

MAJOR MINERAL SANDS DISCOVERY

KEY POINTS

- **New HMS discovery from first drilling at the Dampier Project**
- **Thunderbird discovery on-track to realise potential as a large high grade zircon deposit**
- **Results confirm outcropping high-grade mineralisation with widths of up to 42 metres**
- **Internal zone up to 25.5m thick with grades exceeding 8% HM (at 5% HM cut-off)**
- **Discovery confirms Canning Basin as an exciting new HMS province**

Mineral sands explorer Sheffield Resources ("Sheffield") (ASX:SFX) today announced a major new discovery from drilling at its Dampier heavy mineral sand (HMS) Project near Derby in the Kimberley Region of Western Australia.

The Thunderbird discovery is the first target to be drilled by Sheffield within the Dampier HMS project area.

Results from the first 24 holes (~14% of Sheffield's first drilling programme) have returned high grade mineralised intervals of up to 42 metres in width, including:

- **33m @ 6.3% HM** from surface (THAC022), including **21m @ 8.9% HM** from surface
- **31.5m @ 5.3% HM** from surface (THAC001), including **12m @ 9.0% HM** from surface
- **28.5m @ 6.1% HM** from 1.5m (THAC017), including **16.5m @ 8.7% HM** from 3m
- **30m @ 7.2% HM** from 3m (THAC016), including **18m @ 10.1% HM** from 13.5m
- **42m @ 6.0% HM** from 6m (THAC006), Including **25.5m @ 8.2% HM** from 12m
- **40.5m @ 6.5% HM** from 13.5m (THAC024), including **25.5m @ 8.6% HM** from 19.5m
- **20.5m @ 9.5% HM** from 24m (THAC013)

(Refer to Table 1 for full details).

This is the first major heavy mineral sands discovery within the Canning Basin, establishing it as a new, under-explored mineral sands province. The Canning Basin has recently been the subject of a pegging rush by mineral sands industry participants, with Sheffield and Iluka Resources (ASX:ILU) applying for the largest areas (Figure 1). Sheffield's landholding in the Canning Basin now totals over 2,500km^2 in area.

The planned drilling programme at Thunderbird comprises approximately 170 drill-holes for 8,000m and is scheduled to be completed by mid-September. The programme's objectives are to allow estimation of a Mineral Resource and provide material for metallurgical testwork. Results will be reported progressively over the coming months.

Managing Director, Bruce McQuitty said the drill results are an outstanding start to the programme.

"Few mineral sand deposits in the world can boast the width and grade of mineralisation that we are seeing in these first drill results from Thunderbird."

"It's early days, but these results confirm the potential of what appears to be a very large and high-grade heavy mineral sands deposit.

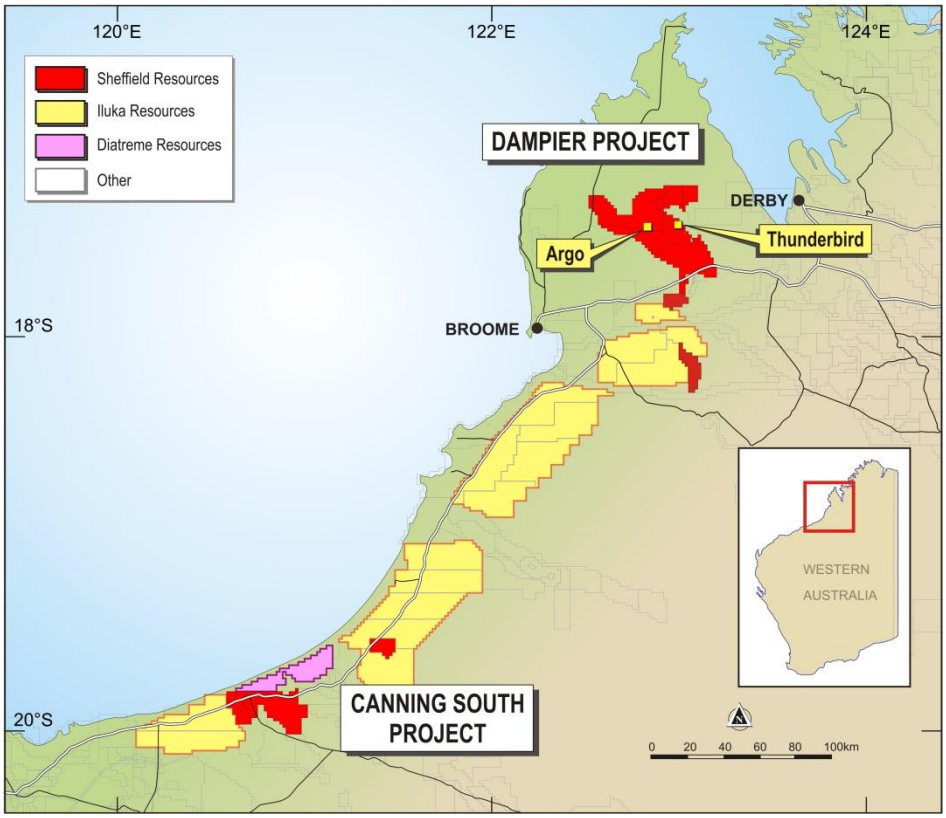

Figure 1: Sheffield's tenements and those of other mineral sands explorers in the Canning Basin

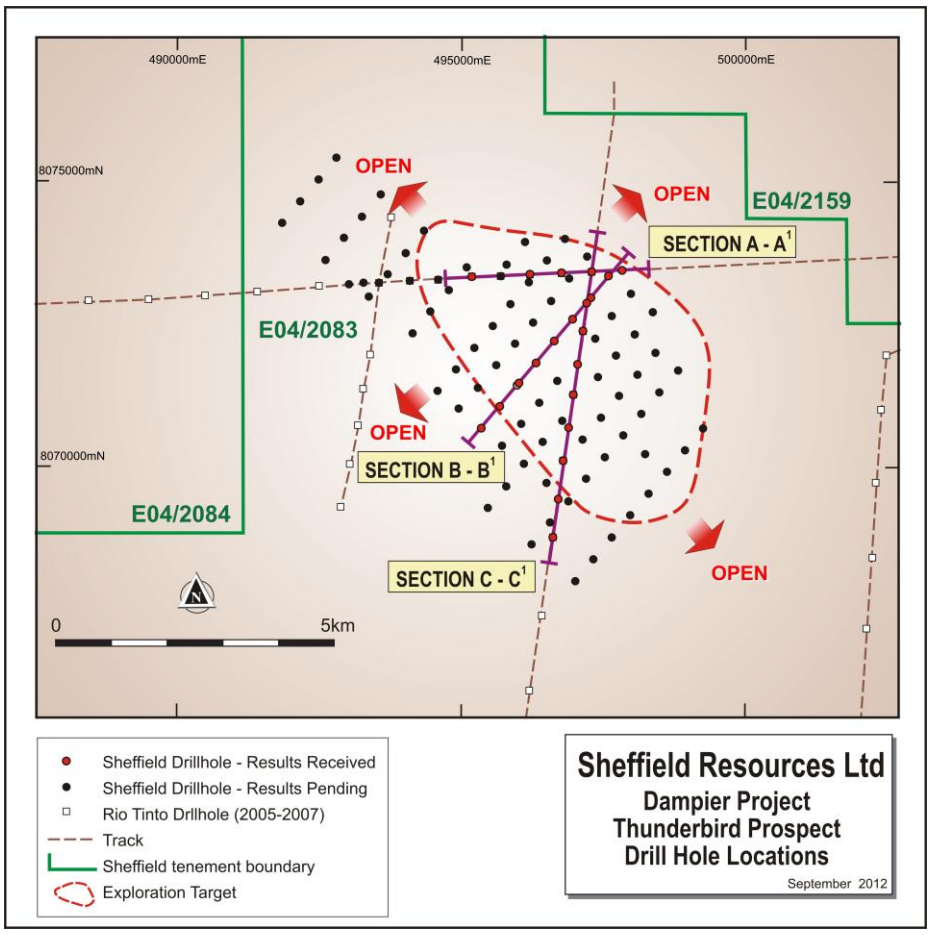

Figure 2: Thunderbird prospect drill collar plan

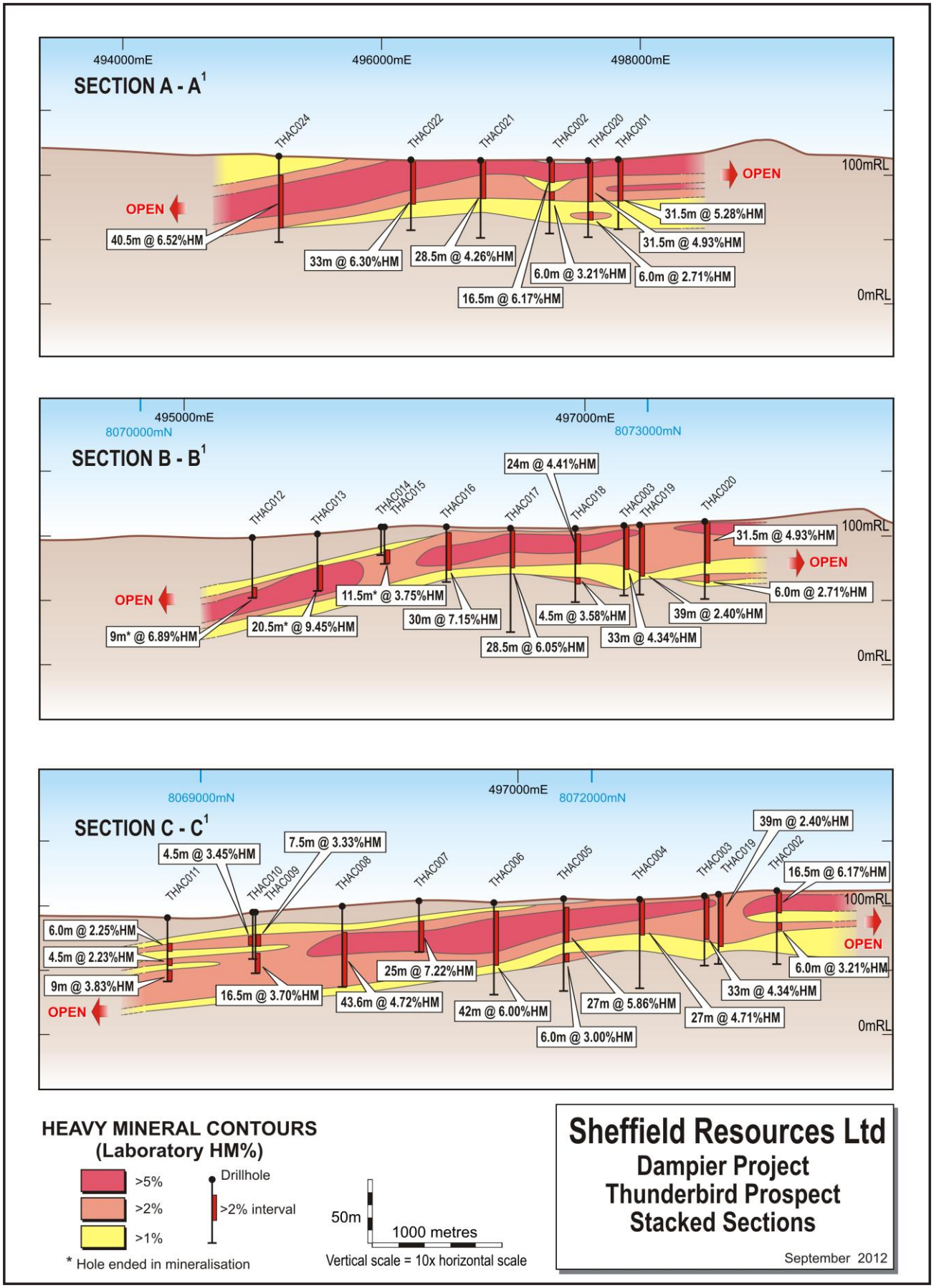

Figure 3: Cross-sections through three lines of drilling where results have been received to date

About the Thunderbird Prospect

The Dampier project contains two significant heavy mineral sands prospects: a large, shallow eastern zone, named Thunderbird; and a smaller, deeper western zone, named Argo.

Sheffield's current drilling programme targets the Thunderbird prospect over an 8km strike length. The drilling pattern ranges from 500m x 500m at the centre of the target area to 500m x 1,000m at the strike extremities (Figure 2).

The drill results relate to an area 5km long by 4km wide (20km^2). At a 2% HM cut-off, the mineralisation varies in thickness from 16.5m to 42m, with an average of 31m. There is a higher-grade core (>5% HM) to the mineralised zone which varies in thickness from 7.5m to 25.5m, with an average thickness of 16m. The mineralisation shows excellent continuity and remains open in all directions (Figure 3). It is hosted in fine loose sand, with minor 30-50cm bands of cemented sand and ironstone which have occasionally prevented drill holes from reaching target depth.

Overburden thickness varies from 0m to 37.5m, with an average of 9m, increasing with the dip of the mineralised unit towards the southwest. Significantly, over half of the mineralisation outlined to date (2.5km across strike) has less than 3m of overburden.

Sheffield's visual observations of the valuable heavy minerals (VHM) show that they are clean with minor coatings and separate easily in the pan (Figures 4-6). Mineralogical work to examine the VHM content, recoverability and quality is in progress.

Further information on the Thunderbird prospect is contained in the Company's ASX releases of 7 September 2011, 8 November 2011 and 12 July 2012.

Exploration Potential

Exploration upside exists beyond the current programme at Thunderbird, with several km of strike potential yet to be tested.

The Argo prospect, located 12km west of Thunderbird, represents another high priority prospect that Sheffield intends to drill in 2013. Mineralisation at Argo is defined by a single scout aircore drilling traverse by a previous explorer which obtained best intersections of 12m @ 3.49% HM from 42m depth (JD036) and 7.5m @ 3.44% HM from 27m depth (JD037) (see ASX release of 7 September 2011).

Figures 4 & 5: Panned Heavy Mineral Concentrate from drill samples at the Thunderbird prospect

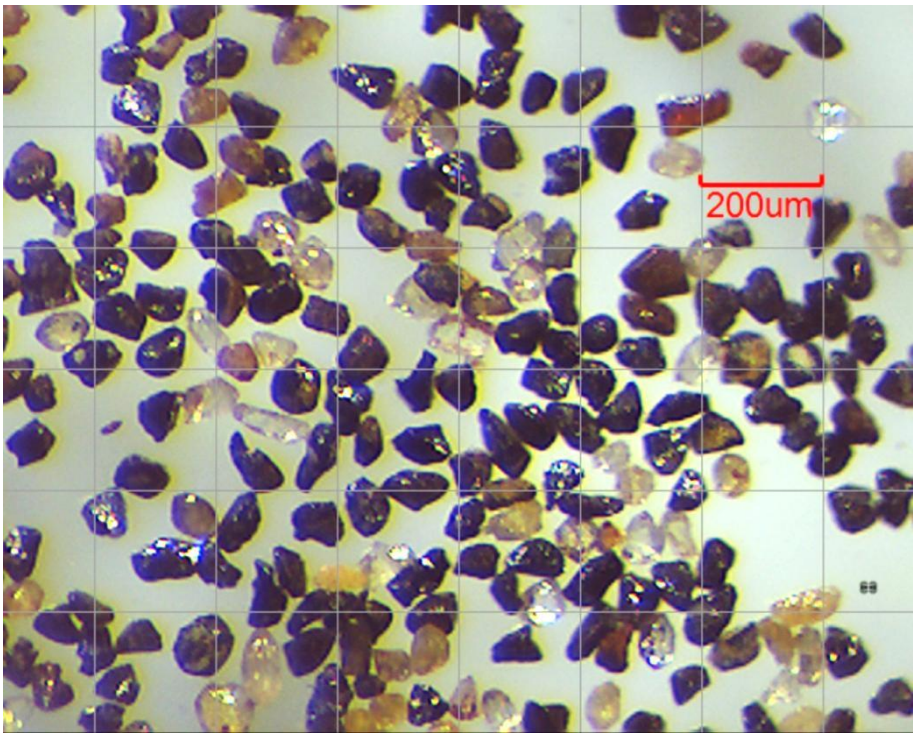

Figure 6: Photomicrograph of VHM grains in sample SA030644 (THAC018 7.5m-9m).

Results Tabulation

Results of heavy liquid separation (HLS) are tabulated below. HLS using TBE, screen sizes: slimes - 45µm, oversize +1mm. Planned hole coordinates are shown (survey pickup pending), coordinate system is MGA Zone 51 (GDA94), all holes drilled vertically.

Table 1: Thunderbird aircore drill results to date. Intervals calculated using >2% HM, *including intervals >5% HM*, 4.5m minimum width, maximum 4.5m internal waste.

Hole ID	Easting	Northing	Depth From (m)	Depth To (m)	Interval Width (m)	HM wt%	Slimes wt%	Osize wt%
THAC001	**497827**	**8073429**	**0.0**	**31.5**	**31.5**	**5.28**	**14.2**	**22.0**
		including:	***0.0***	***12.0***	***12.0***	***8.97***	***12.6***	***23.7***
		including:	*19.5*	*24.0*	*4.5*	*5.38*	*13.1*	*31.6*
THAC002	497289	8073407	0.0	16.5	16.5	6.17	16.4	21.1
		including:	*1.5*	*16.5*	*15.0*	*6.30*	*16.8*	*19.5*
THAC002	497289	8073407	24.0	30.0	6.0	3.21	13.9	31.8
THAC003	497199	8072860	0.0	33.0	33.0	4.34	19.3	27.9
		including:	*1.5*	*9.0*	*7.5*	*10.1*	*16.4*	*33.1*
THAC004	497130	8072365	0.0	27.0	27.0	4.71	17.1	32.8
		including:	*1.5*	*15.0*	*13.5*	*6.62*	*15.8*	*30.5*
THAC005	**497041**	**8071782**	**6.0**	**33.0**	**27.0**	**5.86**	**20.7**	**26.5**
		including:	***7.5***	***24.0***	***16.5***	***8.07***	***15.5***	***29.5***
THAC005	497041	8071782	42.0	48.0	6.0	3.00	25.8	7.9
THAC006	**496967**	**8071248**	**6.0**	**48.0**	**42.0**	**6.00**	**18.4**	**21.3**
		including:	***12.0***	***37.5***	***25.5***	***8.18***	***21.1***	***22.3***
THAC007*	**496888**	**8070668**	**15.0**	**40.0**	**25.0**	**7.22**	**21.7**	**10.5**
		including:	***24.0***	***40.0***	***16.0***	***9.61***	***22.8***	***8.4***
THAC008*	**496787**	**8070081**	**19.5**	**63.1**	**43.6**	**4.72**	**11.5**	**12.0**
		including:	*21.0*	*37.5*	*16.5*	*7.58*	*12.8*	*13.8*
THAC009	496704	8069413	18.0	25.5	7.5	3.33	18.0	5.6
THAC009*	496704	8069413	31.5	48.0	16.5	3.70	7.2	34.4
THAC010	496702	8069404	19.5	24.0	4.5	3.45	18.0	2.8
THAC011	496607	8068741	19.5	25.5	6.0	2.25	10.6	11.4
THAC011	496607	8068741	31.5	36.0	4.5	2.23	8.0	24.4
THAC011*	496607	8068741	40.5	49.5	9.0	3.83	5.6	13.6
THAC012*	495344	8070658	37.5	46.5	9.0	6.89	17.5	18.8
		including:	*39.0*	*46.5*	*7.5*	*7.86*	*15.6*	*21.5*
THAC013*	**495666**	**8071041**	**24.0**	**44.5**	**20.5**	**9.45**	**14.1**	**21.7**
		including:	***25.5***	***44.5***	***19.0***	***9.93***	***13.9***	***22.9***
THAC014	495987	8071424	no significant interval, hole terminated prematurely					
THAC015*	495999	8071442	16.5	28.0	11.5	3.75	28.1	18.8
THAC016	**496308**	**8071807**	**3.0**	**33.0**	**30.0**	**7.15**	**33.1**	**16.7**
		including:	***13.5***	***31.5***	***18.0***	***10.1***	***27.1***	***19.8***
THAC017	**496630**	**8072190**	**1.5**	**30.0**	**28.5**	**6.05**	**20.3**	**14.3**
		including:	***3.0***	***19.5***	***16.5***	***8.65***	***19.1***	***13.3***

Hole ID	Easting	Northing	Depth From (m)	Depth To (m)	Interval Width (m)	HM wt%	Slimes wt%	Osize wt%
THAC018	496951	8072573	3.0	27.0	24.0	4.41	21.4	23.3
		including:	*4.5*	*18.0*	*13.5*	*5.78*	*18.5*	*26.0*
THAC018	496951	8072573	37.5	42.0	4.5	3.58	31.9	7.8
THAC019	497273	8072956	0.0	39.0	39.0	2.40	20.4	15.8
THAC020	497594	8073339	0.0	31.5	31.5	4.93	20.4	15.5
		including:	*1.5*	*12.0*	*10.5*	*7.61*	*22.0*	*22.4*
THAC020	497594	8073339	40.5	46.5	6.0	2.71	24.7	8.3
THAC021	496758	8073385	0.0	28.5	28.5	4.26	18.4	19.4
		including:	*0.0*	*10.5*	*10.5*	*8.37*	*15.2*	*32.0*
THAC022	**496215**	**8073357**	**0.0**	**33.0**	**33.0**	**6.30**	**15.6**	**29.6**
		including:	***0.0***	***21.0***	***21.0***	***8.89***	***15.3***	***28.5***
THAC024	**495196**	**8073308**	**13.5**	**54.0**	**40.5**	**6.52**	**18.5**	**20.3**
		including:	***19.5***	***45.0***	***25.5***	***8.62***	***17.6***	***21.6***

* hole ended in mineralisation

ENDS

For further information please contact:

Bruce McQuitty
Managing Director
Tel: 0409 929 121
bmcquitty@sheffieldresources.com.au

Media: Annette Ellis
Cannings Purple
Tel: 08 6314 6300
AEllis@canningspurple.com.au

Website: www.sheffieldresources.com.au

COMPETENT PERSONS' STATEMENT

The information in this announcement 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.

FORWARD LOOKING AND EXPLORATION TARGET 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", "strategy" 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.

ABOUT SHEFFIELD RESOURCES

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

ASX Code – SFX	Market Cap @ 39cps - $37.3m
Issued shares – 95.7m	Cash - $9.3m (at 30/6/2012)

The Company has over 6,000km^2 of highly prospective tenure, all situated within the state of Western Australia.

HEAVY MINERAL SANDS

The Dampier project, located near Derby in WA's Kimberley region, contains the large, high grade zircon-rich Thunderbird HMS deposit which is currently being drilled.

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 525km^2 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 has identified iron mineralisation on three of its tenements in the Pilbara iron ore province. Thick hematite mineralisation was intersected in first pass RC drilling at the Three Pools project, 20km north of Newman.

TALC

Sheffield's large Moora Talc Belt project contains numerous talc occurrences and is located near Imery's long-life Three Springs talc mine in WA's Mid-West region. The Company is targeting high purity talc, similar to that produced from the simple quarrying operation at Three Springs.