



SheffieldResources  
LIMITED

## ASX and Media Release

8 November 2011

# LARGE EXPLORATION TARGET AT DAMPIER ZIRCON PROJECT

## KEY POINTS

- **Exploration Target<sup>1</sup> of 450-850Mt at 5–10% HM for Thunderbird prospect**
- **Rio Tinto's prior exploration indicates an average of 7.9% HM, with an average of 8% zircon in the heavy mineral assemblage**
- **This equates to an average in situ zircon grade of 0.63%<sup>2</sup> which places Dampier amongst the top tier of zircon exploration projects**

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**Bulk minerals explorer Sheffield Resources ("Sheffield") (ASX:SFX)** today announced an Exploration Target<sup>1</sup> of **450-850Mt at 5-10% HM** for the Thunderbird Prospect at its Dampier mineral sands project near Derby in the Kimberley region of Western Australia.

The announcement of the Exploration Target follows a detailed review by Sheffield's geologists of past drilling by Rio Tinto (ASX: RIO) who explored the Dampier project between 2003 and 2009.

The Exploration Target is based on 8 Rio Tinto drill intersections on two near-perpendicular sections across the deposit (Table 1, Figure 3). These drill intersections outline a mineralised area of 13-18km<sup>2</sup> and a mineralised thickness of between 20m and 25m. The Exploration Target tonnage range is derived by applying a bulk density range of between 1.8-1.9t/m<sup>3</sup> to the estimated volume range.

Within the Exploration Target area the mineral assemblage averages 8.0% zircon, 2.3% rutile, 6.0% leucoxene, 16.9% altered ilmenite, and 16.6% ilmenite; based on the average of 63 samples analysed by SEM probing at the Rio Tinto facility in the United Kingdom in 2006, and 65 samples analysed by the CSIRO in Perth during 2008 using the AutoGeo SEM method. The high average HM (7.9%) and the moderately high average zircon component of the assemblage (8.0%) equate to an average **in situ zircon grade of 0.63%<sup>2</sup>**.

Managing Director, Bruce McQuitty said the in situ zircon grade of 0.63% ranks Thunderbird in the top bracket of zircon exploration targets.

*"Dampier has the makings of a tier one zircon project and could become a flagship project for Sheffield."*

*"Since pegging the Dampier exploration licence in December 2010, zircon prices have almost trebled from \$900/t to current levels of around \$2,600/t. This is a terrific value adding acquisition for Sheffield and credit is due to our team for seizing the opportunity."*

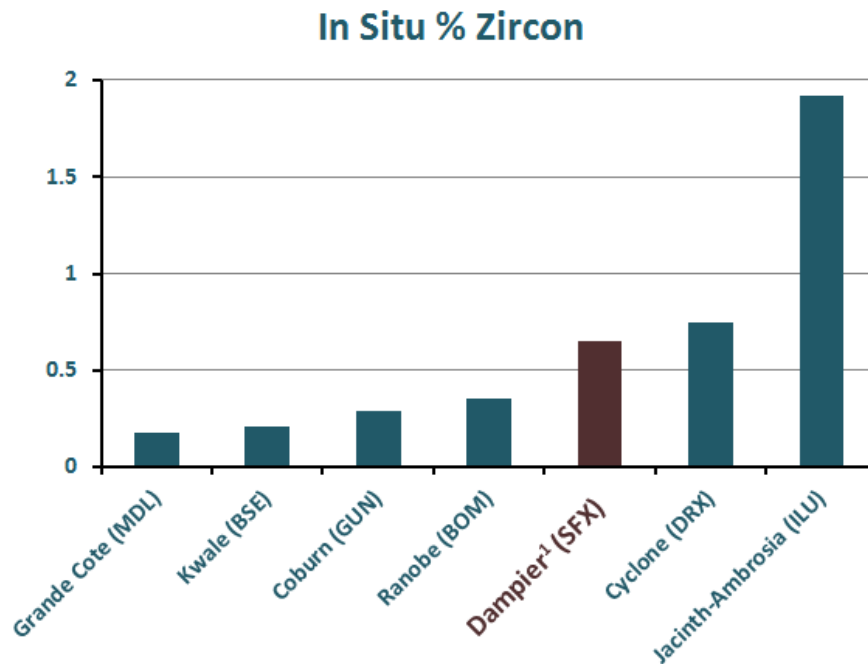
The project is well located with respect to infrastructure including the Great Northern Highway and the port of Derby, and falls outside the recently outlined Kimberley Heritage areas.

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<sup>1</sup> Sheffield Resources has not yet reported Mineral Resources for Thunderbird and any discussion in relation to targets and Mineral Resources is conceptual in nature. There has been insufficient exploration to define a Mineral Resource and it is uncertain if further exploration will result in the determination of a Mineral Resource.

<sup>2</sup> In situ zircon grade is calculated by multiplying the weighted average HM grade by the average zircon content of the mineral assemblage using the intersections quoted in Tables 1 & 2.

Aboriginal Heritage Surveys over the project will be completed as soon as possible after the northern wet season, ahead of an aircore drilling programme of sufficient density to enable estimation of an inferred resource and to provide representative samples for metallurgical work. Sheffield anticipates this drilling will be undertaken in Q2 2012.



**Figure 1: In Situ zircon grade<sup>1</sup> of selected HMS deposits** (information from various public sources).

<sup>1</sup>The Dampier in situ zircon grade is calculated by multiplying the weighted average HM grade by the average zircon content of the mineral assemblage using the intersections quoted in Tables 1 & 2.

ENDS

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Figure 2: Location of Dampier HMS Project

## About Thunderbird

The Thunderbird prospect is located on exploration licence E04/2083, located approximately 60km west of the port of Derby.

The heavy mineral concentrations are hosted by shallowly-dipping and deeply weathered sand units of the Jowlaenga Formation which occurs stratigraphically below the Broome Sandstone and its locally silcreted equivalent, the Melligo Quartzite. Sizing analysis indicates that the heavy mineral is fine-grained and typical of large shallow offshore mineral sand deposits.

At Thunderbird, high grade mineralisation averages over 24m thickness and has been identified on two near-perpendicular lines of drilling over a strike length of 6.5km (see ASX release 7 September 2011). The mineralisation extends down dip for up to 5km, at which point the top of the HM accumulation sits at just 30m depth. In total eight aircore holes have fully tested the target area, half of which ended in mineralisation (Figures 3 and 4, Tables 1 and 2).

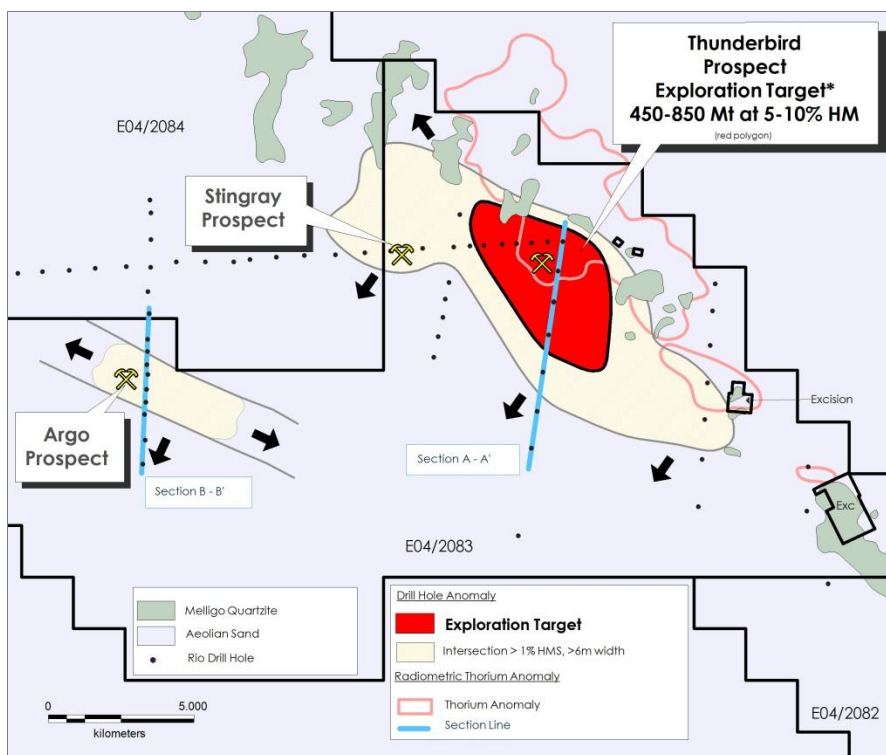


Figure 3: Plan of Dampier project showing location of Thunderbird prospect and Rio Tinto drill holes

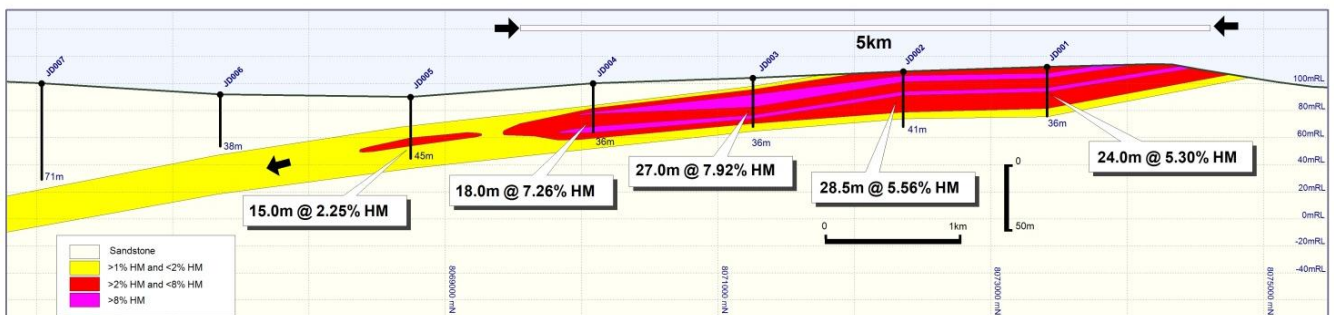


Figure 4: Thunderbird Prospect – Cross Section A-A'

The fine grained nature of the mineralisation and variable iron cementation and hardness may present some metallurgical challenges (lower recoveries) however these are offset by the high heavy mineral grade and the potentially high value zircon, rutile and leucoxene-rich mineral assemblage.

## Exploration Upside

The Thunderbird Exploration Target is surrounded by a larger, sparsely drilled area, 15km in strike length, containing lower grade heavy mineral drill intersections. This broader target is supported by a large thorium radiometric anomaly, thought to be sourced from rare earth-bearing monazite and xenotime within the heavy mineral concentrations (Figure 2).

**Table 1: Rio Tinto drill hole intersections >10m @ >2% HM used to define the Exploration Target**

THUNDERBIRD							
Hole ID	Easting	Northing	Depth From (m)	Depth To (m)	Interval Width (m)	HM %	Slimes %(<45µ).
JD001	497290	8073408	4.5	28.5	24.0	<b>5.30</b>	17.51
JD002	497129	8072357	1.5	30.0	28.5	<b>5.56</b>	17.46
JD003	496974	8071252	9.0	36.0*	27.0	<b>7.92</b>	18.81
JD004	496801	8070081	18.0	36.0*	18.0	<b>7.26</b>	14.38
JD023	496758	8073388	1.5	28.5	27.0	<b>7.00</b>	17.48
JD025	495707	8073332	3.0	15.0*	12.0	<b>13.23</b>	12.65
JD072	494586	8073276	19.5	37.5*	18.0	<b>8.49</b>	15.03
JD073	495703	8073335	3.0	48.0	45.0	<b>9.85</b>	15.67
Wt. Average					24.9	<b>7.9</b>	16.5

**Table 2: Drill hole intersections >10m @ >2% HM – mineral assemblages**

THUNDERBIRD								
Hole ID	Depth From (m)	Depth To (m)	Interval Width (m)	Zircon	Rutile	Leucoxene	Altered Ilmenite	Ilmenite
JD001	4.5	28.5	24.0	<b>10.5</b>	2.5	4.8	11.7	31.2
JD002	1.5	30.0	28.5	<b>9.4</b>	2.9	4.9	13.3	27.1
JD003	9.0	36.0*	27.0	<b>11.4</b>	3.0	6.5	14.1	31.9
JD004	18.0	36.0*	18.0	<b>8.9</b>	2.8	5.7	23.7	26.5
JD023	1.5	28.5	27.0	<b>7.1</b>	1.8	3.7	20.5	5.8
JD025	3.0	15.0*	12.0	<b>4.8</b>	2.2	12.5	19.6	2.2
JD072	19.5	37.5*	18.0	<b>6.2</b>	1.9	10.7	24.0	2.1
JD073	3.0	48.0	45.0	<b>5.5</b>	1.6	4.9	15.4	5.2
Wt. Average			24.9	<b>8.0</b>	2.3	6.0	16.9	16.6

Intersections in Tables 1 & 2 are calculated using a 2% HM lower cut, a minimum interval of 3m and allowing 1.5m internal dilution. NA = not analysed.\* denotes drill hole terminated in mineralisation.

## COMPETENT PERSONS' STATEMENT

The information in this announcement that relates to exploration results is based on information compiled by Bruce McQuitty. Mr McQuitty is a full time employee of the Company. Mr McQuitty 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 McQuitty 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", "prospective", and similar expressions.

The terms "Target" and "Exploration Target", where used in this announcement, 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 new exploration company with a bulk minerals focus. The Company's Projects are geared towards the steel industry feed cycle (iron ore and tungsten) and the emerging fillers-ceramics-pigments cycle (talc, zircon, titanium dioxide).

ASX Code – SFX

Market Cap @ 27.5cps - \$16.1m

Issued shares – 58.7m

Cash - \$3.3 (at 30/9/2011)

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

### HEAVY MINERAL SANDS

Sheffield controls over 5,000km<sup>2</sup> of mineral sands tenure in the established North Perth Basin mineral sands province and the emerging Carnarvon, Eucla and Canning Basin provinces.

The Dampier project, located near Derby in WA's Kimberley region is the most recent addition to Sheffield's heavy mineral sands project portfolio. Dampier is a large scale zircon play formerly explored by Rio Tinto.

Sheffield's North Perth Basin tenement package of over 2,500km<sup>2</sup> contains seven advanced exploration projects: West Mine North, Ellengail, Yandanooka, Durack, Beekeepers, and Irwin which are located near Eneabba; and the large McCalls deposit - a former BHP project located near Gingin. These projects are well located close to existing mineral sands operations and to a network of highways and railway lines connecting to Geraldton and Fremantle/Kwinana ports. Sheffield's strategy is, subject to exploration success, to build multiple HMS projects capable of supporting a flexible mobile mining plant.

### IRON

Sheffield's Pilbara iron ore projects consist of 5 granted tenements and 8 tenement applications, 6 of which are subject to ballot with multiple competing parties. Sheffield's strategy is to target hematite mineralisation adjacent to infrastructure in the world class Pilbara iron province and to build up consolidated tenement holdings over time. High grade iron mineralisation has been identified on three of the Company's tenements.

### TALC

Sheffield has 1,152km<sup>2</sup> of tenure over the 175km-long Moora Talc Belt which represents a dominant ground position over a region that has, for the last 50 years, been exclusively controlled by major mining companies.

The Moora Talc Belt includes the large Three Springs mine which is owned by Imerys subsidiary Luzenac Australia Pty Ltd. Three Springs is renowned for producing high purity talc and is a relatively simple "dig-and-deliver" operation.

The existing infrastructure is excellent. A railway and a sealed highway transect the project and connect to Geraldton port approximately 170km to the northwest.

Sheffield's large tenement holding contains numerous talc occurrences and has the potential to become a strategic talc asset. Sheffield therefore represents a unique opportunity for investors to gain exposure to one of the few high-grade talc explorers in the world.