



ASX and Media Release

2 February 2012

LARGE HMS EXPLORATION TARGET AT IRWIN

KEY POINTS

- **Exploration Target of 220Mt-340Mt at 1.2%–1.6% HM at Irwin**
- **Mineral assemblage testwork (QEMSCAN) indicates a high value mineral assemblage with 10.0% zircon and 7.4% rutile**
- **Large near-surface deposit with low slimes component - important attributes for potential dredge-mining**

Mineral Sands explorer Sheffield Resources ("Sheffield") (ASX:AFX) today announced an Exploration Target¹ and results of mineral assemblage testwork for its Irwin prospect, adjacent to Tiwest's Dongara HMS deposit in Western Australia's Mid-West region (Figure 1).

Sheffield has outlined an Exploration Target¹ of **220-340 million tonnes (Mt)** at **1.2-1.6% HM**. The Exploration Target is derived from interpreted mineralised volumes (>0.9% HM) of 120 to 190 million m³ and a bulk density of 1.8t/m³, and is based on results from both Sheffield's drilling (refer to ASX release dated 13 September 2011) and historical drilling by North Exploration.

QEMSCAN² results indicate a heavy mineral assemblage comprising **10.0% Zircon, 7.4% Rutile, 2.3% Leucoxene and 58.7% Ilmenite**, based on the average of 4 representative composite samples (Table 1). The QEMSCAN results also indicate a favourable coarse grainsize, with median diameter (D₅₀) ranging from 139µm to 157µm.

Significantly, the mineralisation has a very low slimes component (average 5.2% <53µm), and low oversize (3.0% >1mm). Overburden thickness averages 10m, and contains between 0.1% and 0.9% HM. These are favourable attributes for high throughput dredge-mining and low cost processing techniques.

Managing Director, Bruce McQuitty said the large target size and high value mineral assemblage make Irwin an important addition to Sheffield's growing portfolio of HMS projects.

"Irwin forms an important addition to our Eneabba Project. The low slimes and mineralised overburden make the Irwin prospect amenable to dredge mining."

The Irwin Exploration Target follows recently announced Mineral Resources at Sheffield's West Mine North, Ellengail and Yandanooka deposits, and an Exploration Target at Drummond Crossing.

The mineralisation is open to the north where Sheffield has recently applied for tenure over an additional 10km of prospective strike. Further drilling is planned for Q2 2012, to test the northern extension of mineralisation along the base of the Gingin Scarp (see Figure 2).

¹Sheffield Resources has not yet reported Mineral Resources for Irwin 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. Figures have been rounded to reflect the implied level of accuracy.

²The Mineral Assemblage is represented as the percentage of the Heavy Mineral (HM) component of the deposit, as determined by QEMSCAN particle analysis. TiO₂ minerals are defined according to the following ranges: Rutile >95% TiO₂; Leucoxene 85-95% TiO₂; Ilmenite <55-85% TiO₂.

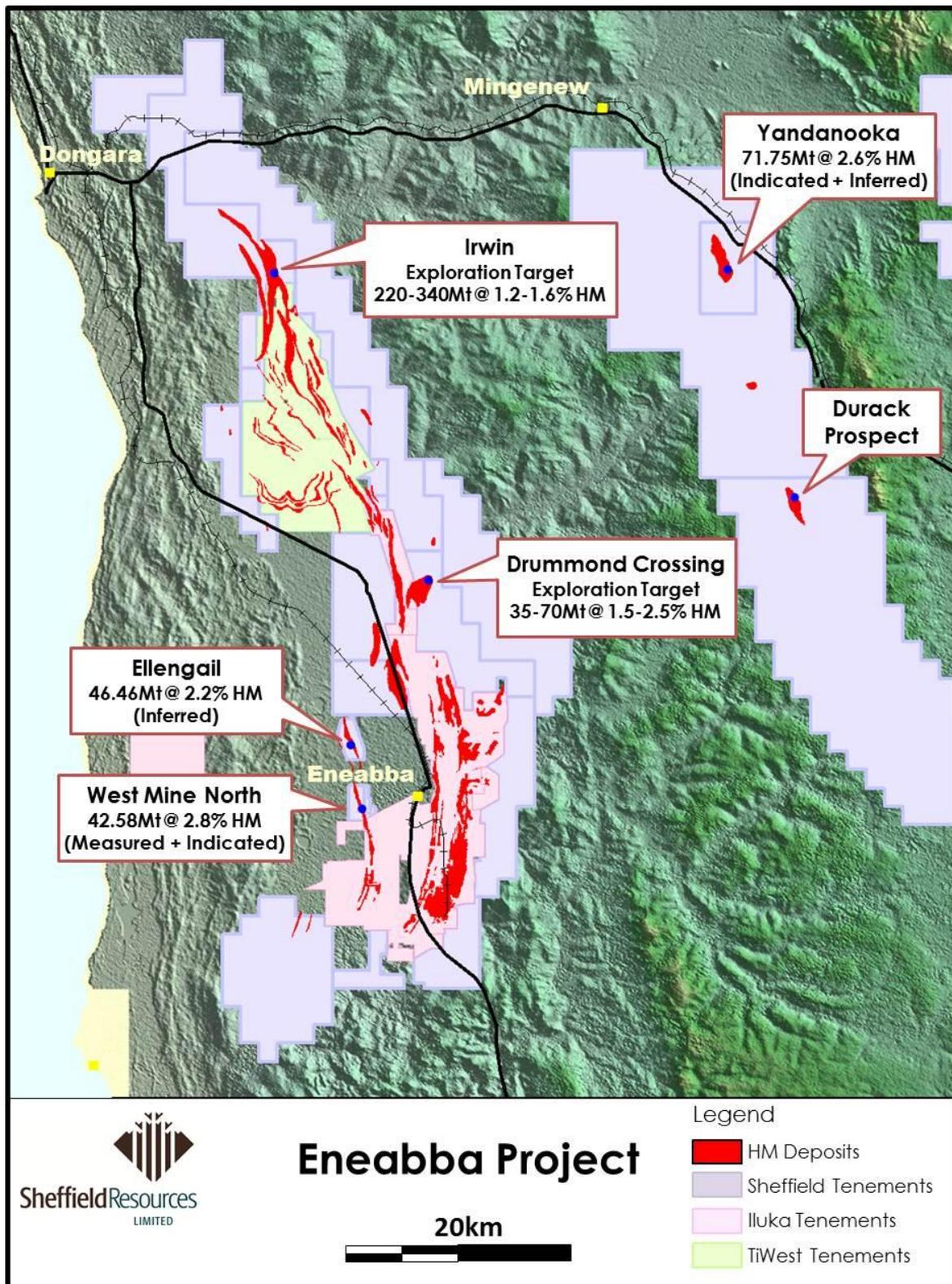


Figure 1: Sheffield's HMS prospects within the Eneabba project showing the location of the Irwin prospect

ENDS

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About Irwin

Sheffield's Irwin prospect is located 80km southeast of the port of Geraldton, and 50km north of the town of Eneabba in Western Australia's Mid-West. It is immediately north of Tiwest's large Dongara heavy mineral sands deposit (Figure 1). Unlike the Dongara deposit which consists of several high grade strand lines, the mineralisation at Irwin is predominantly dunal.

Irwin occurs near the base of the Gingin escarpment at the northern extension of the Eneabba palaeo-shoreline position (Figures 1-2). Mineralisation extends up to 6km N-S by 3km E-W, and averages 10m thickness (locally up to 24.5m thick). The deposit is open to the north (Figures 2-3).

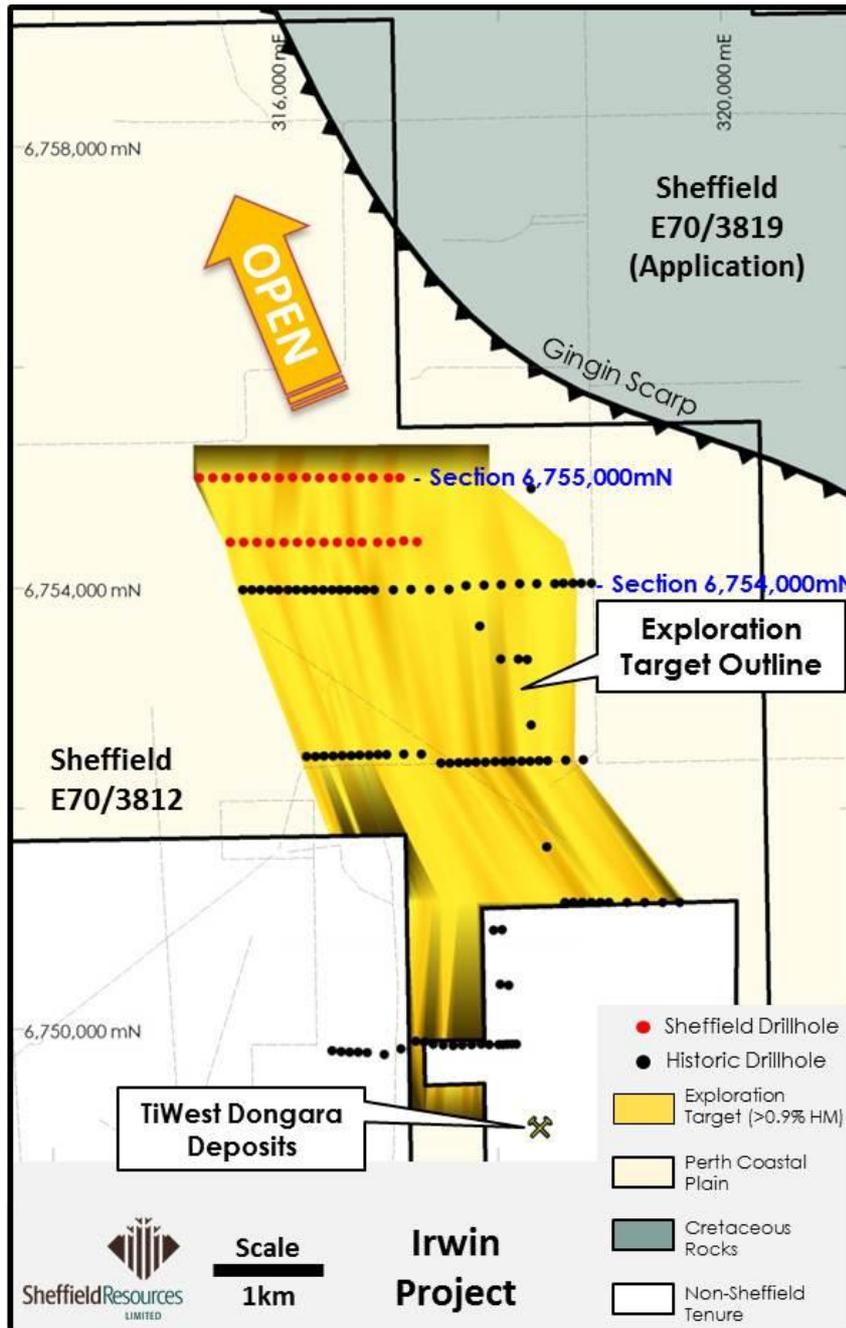


Figure 2: Irwin Exploration Target plan.

Heavy Mineral assemblage results determined by QEMSCAN are detailed in Table 1. Visual examination of HM concentrates indicate clean, well-sorted heavy minerals which should respond well to conventional mineral separation processes.

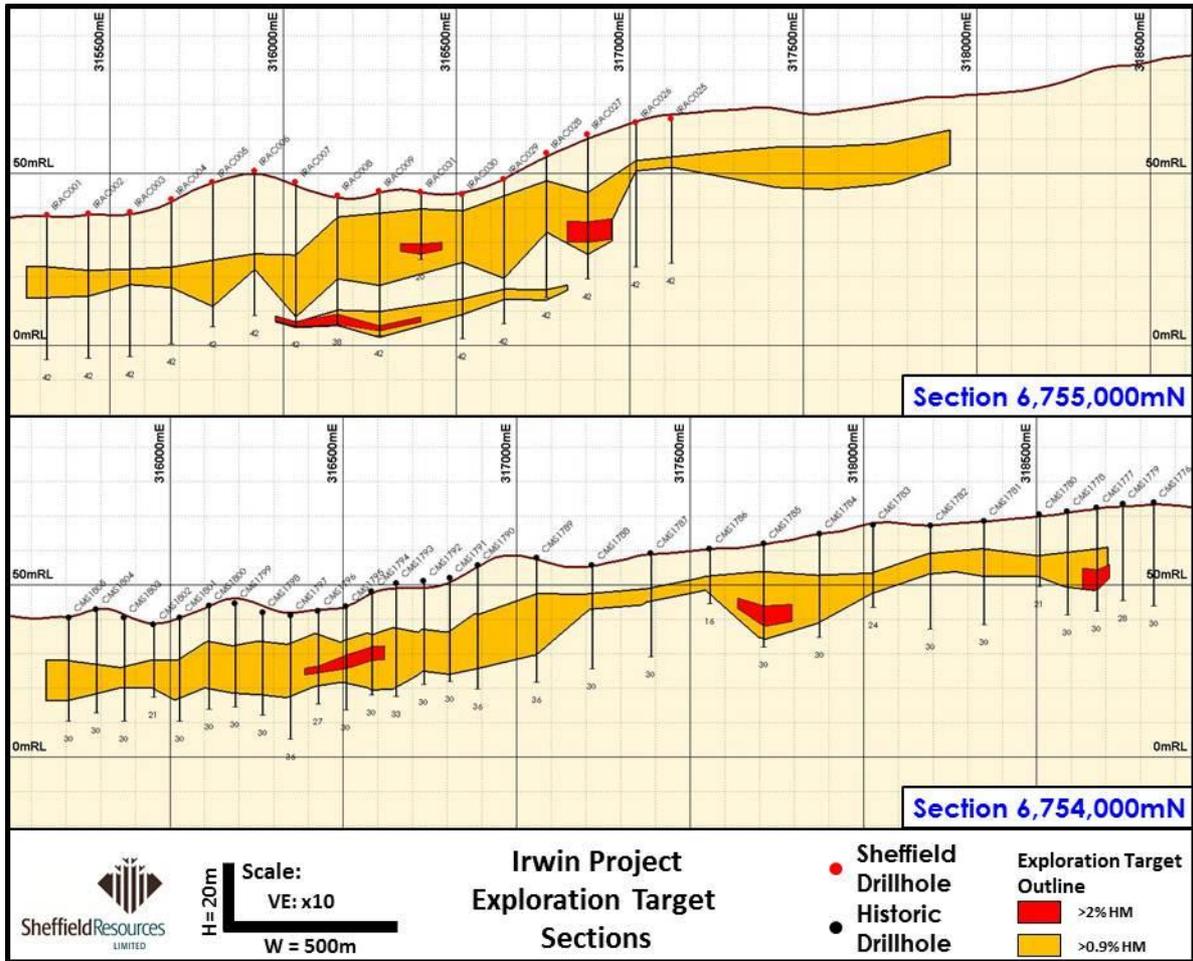


Figure 3: Exploration Target cross sections - looking north (note 10x vertical exaggeration).

Table 1: Results of QEMSCAN mineral assemblage analysis.

Sample	Name	SAIRWP001	SAIRWP002	SAIRWP003	SAIRWP004	Average
Mineral Mass %	Zircon	8.52	9.44	11.43	10.69	10.0
	Rutile	7.85	7.61	6.21	7.80	7.4
	Rutile Coated	0.00	0.00	0.00	0.00	0.0
	Leucoxene	2.61	2.09	1.46	3.03	2.3
	Leucoxene Coated	0.00	0.00	0.03	0.00	0.0
	Ilmenite	60.70	55.71	62.81	55.66	58.7
	Ilmenite Coated	0.70	0.47	1.45	1.59	1.1
	Si bearing Ti Oxide	6.75	6.30	3.44	3.28	4.9
	Quartz	0.31	0.57	0.16	0.37	0.4
	Chromite	0.13	0.24	0.20	0.19	0.2
	REE-bearing	0.58	0.52	0.57	0.53	0.6
	Staurolite	3.24	4.31	3.51	4.40	3.9
	Andalusite	5.11	6.68	4.96	5.06	5.5
	Tourmaline	2.75	4.43	2.20	2.22	2.9
	Kaolinite	0.01	0.00	0.08	0.02	0.0
	Fe Oxide	0.21	0.09	0.17	1.24	0.4
	Other Silicates	0.22	1.17	0.92	3.13	1.4
	Other	0.31	0.35	0.42	0.79	0.5
TOTAL		100.00	99.98	100.02	100.00	100.00

Total particle chemistry is used in the mineral classification. TiO₂ minerals are defined according to the following ranges: Rutile >95% TiO₂; Leucoxene 85-95% TiO₂; Ilmenite <55-85% TiO₂. "Coated" refers to particles which have >80% coatings and are treated as "other" minerals in the assemblage. Refer to Table 2 for details of composite samples.

Table 2: QEMSCAN composite drillhole details.

Sample	Hole ID	Easting	Northing	Depth From (m)	Depth To (m)
SAIRWP001	IRAC023	317154	6754423	22.5	30.0
SAIRWP001	IRAC025	317120	6754999	19.5	36.0
SAIRWP001	IRAC028	316760	6754999	16.5	31.5
SAIRWP002	IRAC001	315319	6754997	15.0	22.5
SAIRWP002	IRAC007	316037	6754999	21.0	30.0
SAIRWP002	IRAC019	316678	6754412	10.5	18.0
SAIRWP003	IRAC015	315597	6754411	18.0	24.0
SAIRWP003	IRAC017	316438	6754412	13.5	19.5
SAIRWP003	IRAC022	317038	6754414	16.5	28.5
SAIRWP004	IRAC004	315678	6754999	13.5	18.0
SAIRWP004	IRAC011	316080	6754413	13.5	22.5
SAIRWP004	IRAC014	315718	6754410	15.0	22.5
SAIRWP004	IRAC023	317154	6754423	19.5	22.5
SAIRWP004	IRAC024	317274	6754415	31.5	36.0
SAIRWP004	IRAC027	316878	6754999	1.5	16.5

Coordinates are MGA Zone 50 GDA94 projection, holes drilled vertically

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 rapidly emerging heavy mineral sands (HMS) company with significant additional iron and talc assets.

ASX Code – SFX

Market Cap @ 33cps - \$19.5m

Issued shares – 58.7m

Cash - \$2.3 (at 31/12/2011)

The Company has over 6,000km² 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 has the potential to become Sheffield's flagship HMS project. It contains a large zircon-rich HMS deposit formerly explored by Rio Tinto.

Sheffield's Eneabba Project contains six advanced exploration prospects: West Mine North, Ellengail, Yandanooka, Durack, Drummond Crossing and Irwin which are located near Eneabba. The Project is close to existing mineral sands operations and to a network of highways and railway lines connecting to the Geraldton and Fremantle/Kwinana ports. Sheffield's strategy is, subject to exploration success, to develop multiple HMS deposits capable of supporting a flexible mobile mining plant.

Sheffield is also evaluating the large McCalls project, located near Gingin.

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 1,152km² 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.

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.